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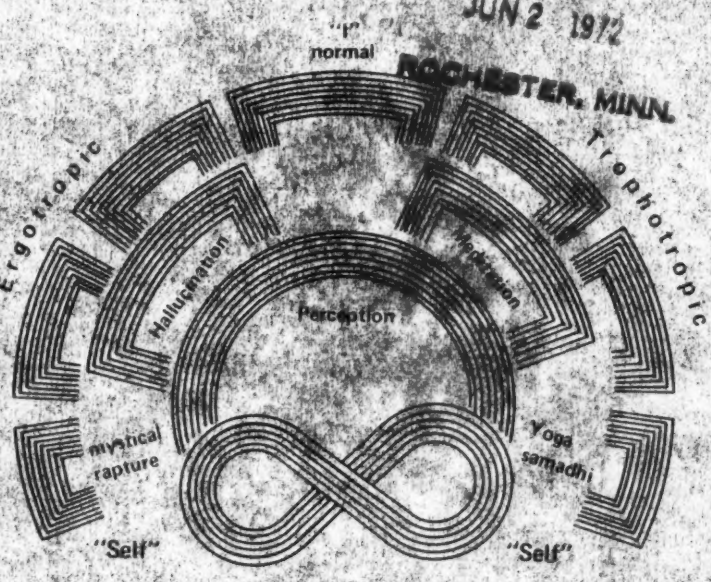

cover story

States of Consciousness

Recent studies on states of consciousness have opened new dimensions in the field of psychophysiology. The effects of biofeedback mechanisms on the brain are being studied increasingly. Because of the widespread use and abuse of drugs in today's society, the ways in which these drugs alter states of consciousness are being carefully examined; even the psychiatric benefits of the meditative states of Zen are being explored. Recently Dr. Roland Fischer proposed a "cartography" of the normal, ecstatic, and meditative states of consciousness. The cover is a stylized representation of this cartography.

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A Cartography of Ecstatic and Meditative States

Roland Fischer

In this age so concerned with travel in outer as well as inner space, it is strange that we have no cartography of the varieties of human experience. In order to draft a map of inner space, I will guide you on two voyages: one along the perception-hallucination continuum of increasing ergotropic arousal, which includes creative, psychotic, and ecstatic experiences; and another along the perception-meditation continuum of increasing trophotropic arousal, which encompasses the hypoarousal states of Zazen and Yoga samadhi.

Along the perception-hallucination continuum of increasing arousal of the sympathetic nervous system, man —the self-referential system—perceptually-behaviorally (cortically) interprets the change (drug-induced or "natural") in his subcortical activity as creative, psychotic, and ecstatic experiences. These states are marked by a gradual turning inward toward a mental dimension at the expense of the physical. The normal state of daily routine is followed by an aroused, creative state, which can be characterized by an increase in both data content (a description of space) and rate of data processing ("flood of inner sensation"). However, in the next aroused state on the continuum, the acute schizophrenic state, a further increase in data content may not be matched by a corresponding increase in the rate of data processing. While the creative state is conducive to the evolution of novel relations and new meaning, the psychotic "jammed computer" state interferes with the individual's creative interpretation of the activity of his central nervous system (CNS). At the peak of ecstatic rapture, the outside (physical) world retreats to the fringe of consciousness, and the individual reflects himself in his own "program." While the creative person may travel freely between "normal" and creative states, the chronic schizophrenic patient is stranded in the "jammed computer" state. And the talented mystic, of course, does not need to go through every intermediate step to attain ecstasy.

The mutually exclusive relationship between the ergotropic and trophotropic systems justifies a separate perception-meditation continuum of increasing trophotropic arousal that is continuous with, and to the right of, the perception-hallucination continuum (Fig. 1). The course of our second trip will take us in the opposite direction, along the tranquil perception-meditation continuum, where man may symbolically interpret his gradually increasing trophotropic arousal as Zazen, and samadhi.

The mutual exclusiveness of the ergotropic and trophotropic systems can be illustrated by characteristic changes in the frequency of the small, involuntary, micronystagmoid movements of the eye. These rapid scanning movements are regarded as a prerequisite for the fixation of an object in physical space-time. The frequency of saccadic movements is increased five- to eightfold in response to the ergotropic arousal induced by moderate doses of mescaline, psilocybin, or LSD. This increase is also present without drugs in acute schizophrenics.

On the other hand, 0.9 g. of alcohol per kg. of body weight, and even sleepiness and fatigue, decreases saccadic frequency; more precisely, 0.01

mg. of diazepam per kg. of body weight reduces the saccadic frequency by 9 degrees per second. Such a progressive decrease seems to be a characteristic feature of trophotropic arousal along the perception-meditation continuum. That the alpha rhythm appearing on the electroencephalogram (EEG) appears to be phase-locked to the onset of saccades may also be of significance, since states of progressively greater trophotropic arousal along the perception-meditation continuum are characterized by EEG waves of progressively lower frequencies (Fig. 1, right). Since a complete arrest of saccadic frequency results in periodic fading, disintegration, and fragmented reconstruction of the image, we may postulate that reduced saccadic frequency may be linked with the Yogi's comment that, at the peak of a meditative experience, he can still see "objects," but they have no predicative properties.

What are Hallucinations and How Can They Be Measured?

The hallucinatory or waking-dream states along the perception-hallucination continuum can best be described as experiences of intense sensations that cannot be verified through voluntary motor activity. We can describe verifiable perceptions by assigning to them low sensory-to-motor (S/M) ratios, while nonverifiable hallucinations and dreams can be characterized by increasing S/M ratios as one moves along the perception-hallucination or perception-meditation continuum toward ecstasy or samadhi, the two most hallucinatory states. Moderate doses of the hallucinogenic drugs LSD, psilocybin, and mescaline can get one "moving"

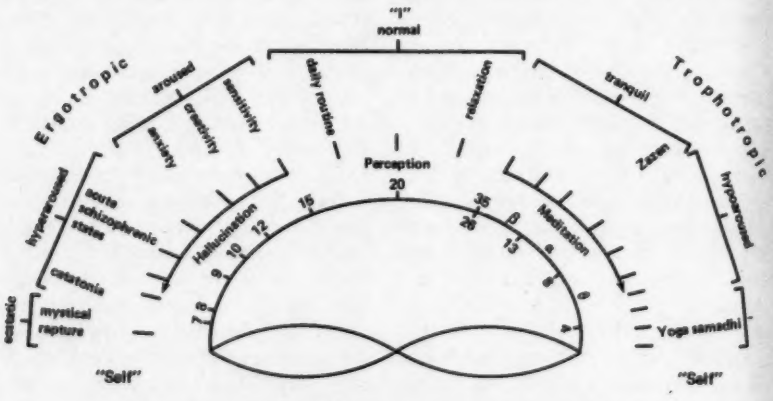

Fig. 1. Varieties of conscious states mapped on a perception-hallucination continuum of increasing ergotropic arousal (left) and a perception-meditation continuum of increasing trophotropic arousal (right). These levels of hyper- and hypoarousal are interpreted by man as normal, creative, psychotic, and ecstatic states (left) and Zazen and samadhi (right). The loop connecting ecstasy and samadhi represents the rebound from ecstasy to samadhi, which is observed in response to intense ergotropic excitation. The number 35 to 7 on the perception-hallucination continuum are coefficients of variation, specifying the decrease in variability of the EEG amplitude with increasing ergotropic arousal. The numbers 26 to 4 on the perception-meditation continuum, on the other hand, refer to those beta, alpha, and theta EEG waves (measured in hertz) that predominate during, but are not specific to, these states.

along the perception-hallucination continuum, whereas minor tranquilizers and some muscle relaxants may initiate travel along the perception-meditation continuum.

A quantitative meaning has been given to the S/M ratio by measuring the components of a psychomotor performance, specifically, handwriting area and handwriting pressure, in volunteers during a psilocybin-induced waking-dream state. The techniques for measuring handwriting area (S), as well as for obtaining handwriting pressure (M), with an indicator that operates on a pressure-voltage-to-frequency basis, have been described elsewhere. Using these two parameters prior to and at the peak of a psilocybin-induced experience, we found in a sample of 47 college-age volunteers a 31 percent increase in mean S/M ratio.

Space and Increasing Hyper- and Hypo-arousal

We call man's symbolic interpretation of his CNS activity "perception-behavior" and regard creative, "hyperphrenic," and ecstatic states, as well as Zazen and samadhi, as perceptual-behavioral interpretations of ergotropic and trophotropic arousal, respectively. We may now consider some of the perceptual-behavioral changes, or transformations, that gradually develop as the level of arousal increases and decreases along each continuum. One of the most conspicuous transformations is that of "constancies," which in the normal state of daily routine form a learned structure of primary ordering of space and time "out there." The adult interprets his CNS activity within a structure of similar criteria, and thus experience can be said to consist of two processes: the programed (subcortical) CNS activity; and the symbolic or perceptual-behavioral (cortical) interpretation, or metaprograms, of the CNS activity.

The ability to readapt to optically induced spatial distortions, or to maintain the constancy of the visual world, gradually diminishes as a subject turns inward under the influence of psilocybin. Another finding revealed that the preferred level of brightness increases under the influence of hallucinogenic drugs, but only in "variable" subjects—that is, those subjects whose large standard deviations on a variety of perceptual and behavioral tasks indicate a large and varied interpretive repertoire. However, in "stable" subjects, who are characterized by small standard deviations and by smaller and more predictable interpretive repertoires, the level of preferred brightness decreases when they are under the influence of hallucinogenic drugs. In addition, nearby visual space was found to gradually close in as subjects moved along the perception-hallucination continuum under the influence of moderate doses of psilocybin.

The transformation of constancies under ergotropic arousal can also be observed in acute schizophrenics under "natural" ergotropic arousal (that is, without hallucinogenic drugs). The transformation of constancies during acute psychotic episodes apparently gives rise to a "vertical displacement of the visual angle," which is implicit in a contraction of visual space and which results in an elevation of the horizon.

I have also observed that the just-noticeable difference (JND) in taste, expressed as Weber fraction, becomes smaller with increasing ergotropic arousal: subjects need fewer molecules of a sapid substance to taste a JND in sweetness or bitterness. But under the influence of tranquilizers of

the phenothiazine type, the Weber fraction becomes larger: more molecules are needed to taste a JND. Since the Weber fraction is constant at levels of arousal associated with daily routine, I interpret the above as examples of arousal-induced transformations of constancies. Because the number of molecules necessary to elicit the sensation of a JND gradually decreases during a voyage from the physical to the mental dimension along the perception-hallucination continuum, it might be extrapolated that no sapid molecules at all are needed for the experience of taste during ecstasy.

It should be emphasized that the projection of our CNS activity as location in the physical dimension of space and time "out there" was learned at, and is hence bound to, the lower levels of arousal characteristic of our daily survival routines. This is evidenced in the observation that schizophrenic children do not experience hallucinations of the projected type like adults, but only of the introjected type.

The constancy of corporeal awareness also undergoes transformations as one moves along the perception-hallucination continuum. The constancy of the "I" is interfered with as one moves along the perception-hallucination continuum from the "I" of the physical world to the "Self" of the mental dimension. The perception-meditation continuum also involves a departure from the "I" to the "Self." These two continua can thus be called "I-Self" continua. The "Self" of ecstasy and the "Self" of samadhi are one and the same "Self."

The further we progress on the perception-hallucination continuum from the normal through the creative, psychotic, and, ultimately, to the ecstatic state, the more complete is the transformation, or "unlearning," of the constancies of the physical dimension. Input, or outside information in general, is gradually reduced along this continuum. Space, then, which was gradually established in ever-widening circles during childhood, gradually contracts with increasing arousal and ultimately disappears.

Time and Increasing Hyper- and Hypoarousal

A gradual contraction and ultimate disappearance is also the fate of chronological time in the physical dimension (of the "I" state) as one progresses along the perception-hallucination or the perception-meditation continuum. In particular, we find that LSD and psilocybin cause an overestimation of time, the magnitude of which is related to a subject's variability on a perceptual or behavioral test before ingesting the given drug. The greater a subject's variability before ingesting a drug, the greater will be his contraction or overestimation of time at drug peak. Moreover, the greater the subject's variability, the greater will be his "rebound effect" 24 hours after; that is, his underestimation or expansion of time.

Dividing people, according to the magnitude of their perceptual variability, into "maximizers" ("stable" subjects) and "minimizers" ("variable" subjects) assists one in resolving the hotly debated question of whether time "flies" or "drags" during a hallucinogenic drug-induced experience. Actually, it does both: it is overestimated by the minimizers, the subjects with a large standard deviation, who prefer to decrease sensory data content and its rate of processing at drug peak; and it is underestimated by the maximizers, the subjects with a small standard deviation, who prefer to in-

crease data content and its rate of processing at drug peak.

By "time-contraction," I mean an increase in data content within a chronological time span, or in experiential terms, "the flood of inner sensation;" and I imply that, during such an experience, the subject, if without a watch, would arrive early for an appointment. Under the impact of an acute, hallucinogenic drug-induced experience, the subject usually compares the time-contraction or increased data content of the mental dimension with his past and present routine performance in physical space-time and has, therefore, to conclude that "time" passes slowly. Thus, there is only an apparent contradiction in terms: while experience is shifting from the physical toward the mental dimension, physical or chronological time becomes less and less important. This contradiction resolves itself at the peak of ergotropic or trophotropic arousal, since these purely mental states are timeless and spaceless and in no need of comparative verification.

Increasing Cortical-Subcortical Integration with Increasing Arousal

If we assume that man, the self-referential system, creates experience through the cortical interpretation of his subcortical activity, we may ask about the extent of freedom, or relative independence, of the mind from the subcortical substratum.

We can find no relation between the extent of psilocybin-induced perceptual and behavioral (or cortical) change and a drug-induced increase in pupillary diameter, which is a drug dose-dependent parameter of autonomic activity. This lack of relation points to a large degree of freedom of cortical interpretive activity, even under moderate hyperarousal.

The set and setting, as well as the personality, decisively influence the cortical interpretation of hallucinogenic drug-induced changes in subcortical activity. What is not fully realized is that set, setting, personality, expectations, and past experiences determine the cortical "effects" of most of the psychoactive drugs when they are used in medically endorsed dosages. In fact, except for the anesthetics and hypnotics, there are no drugs that selectively direct human cognitive functions.

With rising levels of ergotropic and trophotropic arousal, however, perception-behavior becomes increasingly dependent upon the subcortical substratum that generates it. A cat responds to ergotropic hyperarousal with rage, while at the peak of trophotropic arousal the animal always yawns, curls up, and falls asleep. But man may be compelled to interpret these two extreme states of hyper- and hypoarousal as ecstasy and samadhi. This increasing stereotypy (loss of freedom) with increasing ergotropic arousal can be observed, for example, as a decrease in the variability of the EEG amplitude. A decrease in variability is expressed as the coefficient of variation (see Fig. 1). Increasing stereotypy also manifests itself as an increase in the S/M ratio, thus indicating an intensification of inner sensations, accompanied by a loss in the ability to verify them through voluntary motor activity.

Apparently, then, an increase in ergotropic arousal is paralleled by a restriction in the individual's repertoire of available perceptual-behavioral interpretations. This restriction implies that certain levels can *only* be interpreted as creative or psychotic experiences. Although a religious interpretation is a common feature of catatonia, ecstasy, which is the mysti-

cal experience of the Oneness of everything, results from a creative breakthrough out of catatonic hyperarousal. During the ecstatic state, there is neither capacity nor necessity for motor verification of the intense sensations. In the mental dimension, in contrast to the physical, the all-pervasive experience of absolute certainty does not require further verification and will be structured according to current mythology or the belief system of a St. Francis, Pascal, or Ramakrishna. What is one man's loss of freedom, therefore, may be another's gain in creativity.

An increasing stereotypy can also be observed along the perception-meditation continuum of increasing trophotropic arousal (see Fig. 1, right); this enables one to gradually exclude stimulation from without and turn attention inward. Continuous trains of alpha waves accompany these changes, and the dominant frequency of the alpha pattern decreases toward the alpha-theta border region, until some subjects, in a state of reverie, produce long trains of theta waves. In the inner-focused state Zen masters show an alpha-blocking response to auditory clicks, but, in contrast to normal controls, do not habituate to these stimuli. The Yoga samadhi apparently represents a more intense state of trophotropic arousal than Zazen does and must also express a greater inability to function in physical space-time than Zazen does. In fact, a Yoga master denies noticing *any* outside stimuli during deep meditation, whereas control subjects show alpha-blocking with as little stimulus as a flashing light.

"Self": The Knower and Image-Maker; and "I": The Known and Imagined

At the peak of trophotropic arousal, in samadhi, the meditating subject experiences nothing but his own self-referential nature, void of compelling contents. In both timeless and spaceless experiences, the mundane world is virtually excluded. Of course, the converse is true of the mundane state of daily routine, in which the oceanic unity with the universe, in ecstasy and samadhi, is virtually absent. Thus, the mutual exclusiveness of the "normal" and the exalted states, both ecstasy and samadhi, allows us to postulate that man exists on two levels: as "Self" in the mental dimension of exalted states; and as "I" in the objective world, where he is able and willing to change the physical dimension "out there." In our terminology, the "Self" of exalted states is that which sees and knows, while the "I" is the interpretation, that which is seen and known in the physical space-time of the world "out there." The mutually exclusive relation between the "seer" and the "seen," or the elusiveness of the "Self" and the "I," may have its physiological basis in the mutual exclusiveness of the ergotropic and trophotropic systems.

A discernible communication between the "Self" and the "I" is only possible during the dreaming and hallucinatory states, whether drug-induced or "natural." These states can be located approximately between coefficients of variation 10 and 13 on the perception-hallucination continuum (Fig. 1, left) and in the 9 to 12 hertz EEG range on the perception-meditation continuum (Fig. 1, right). Such "I"-"Self" communication is the creative source of art, science, literature, and religion.

In spite of the mutually exclusive relation between the ergotropic and trophotropic systems, however, there is a phenomenon called "rebound to superactivity," or trophotropic rebound, which occurs in response to

intense sympathetic excitation, that is, at ecstasy, the peak of ergotropic arousal. A rebound into samadhi at this point can be conceived of as a physiological protective mechanism. The rebound of the trophotropic system is not confined to the autonomic branches, but also causes significant changes in behavior. These rebound or reversal phenomena between ecstasy and samadhi are illustrated by the loop connecting the two extreme exalted states in Fig. 1.

The "Self" of ecstasy and samadhi are one and the same, as if the reflecting surface of a lake in Fig. 1 embraced both exalted states. Each level of water would connect a hyper- and hypoaroused state with a specific subjectivity/objectivity (or "Self"-to-"I") ratio, implying a similarity between those pairs of hyper- and hypoaroused states that are connected by gradually raised levels of water.

During the "I"-state of daily routine, the outside world is experienced as separate from oneself, and this may be a reflection of the greater freedom of cortical interpretation from subcortical activity. With increasing ergotropic and trophotropic arousal, however, this separateness gradually disappears, apparently because in the "Self"-state of ecstasy and samadhi, cortical and subcortical activity are indistinguishably integrated. This unity is reflected in the experience of Oneness with everything, a Oneness with the universe that is oneself.

Sign-Symbol-Meaning Transformations

The separateness of subject and object during the daily routine levels of arousal (in the "I"-state) has been elaborated in our customary, rational, Aristotelian logic and language—a two-valued (either-or, true-false) logic that discounts the interaction between observer and observed. This separateness of object and subject, as we have seen, is a reflection of the relative independence of cortical interpretation from subcortical activity and is of survival value in the "I"-state, where the subject must make decisions of life and death by manipulating objects.

But when we depart along either continuum from the "I" toward the "Self," the separateness of object and subject gradually disappears and their interaction becomes the principal content of the experience. This interaction, again, is a reflection of the gradually increasing integration of cortical and subcortical activity. In this state of Unity, the separateness of object and subject gradually disappears and their interaction becomes the principal content of the experience. This interaction, again, is a reflection of the gradually increasing integration of cortical and subcortical activity. In this state of Unity, the separateness of subject and object becomes meaningless: only a symbolic logic and language can convey the experience of intense meaning. Since this intense meaning is devoid of specificities, the only way to communicate its intensity is the metaphor; hence, only through the transformation of objective sign into subjective symbol in art, literature, and religion can the increasing integration of cortical and subcortical activity be communicated.

The transformation of sign to symbol is also apparent in the visual realm, where the constancies of space and time are replaced by geometric-ornamental-rhythmic structures. I would include hyper- and hypoaroused hallucinatory experiences in general, whether electrically, "naturally," or drug-induced. The hallucinatory constancies are "magical symbols," visible or audible metaphors within a structure of symbolic logic

and language, the language of hyper- and hypoaroused hallucinatory states, and are at the base of the general tendency toward geometric-rhythmic ornamentalization. The tendency toward ornamentalization, however, is not reserved to visual imagery, but also governs the order of poetic and musical rhythm, imposing an all-pervasive metrum and harmony on the hallucinatory creative-religious states; the rhythm of music, poetry, and language corresponds to the geometric-ornamental rhythm of the visual realm.

State-Boundaries

Inasmuch as experience arises from the binding or coupling of a particular state or level of arousal with a particular symbolic interpretation of that arousal, experience is state-bound; thus, it can be evoked either by inducing the particular level of arousal, or by presenting some symbol of its interpretation, such as an image, melody, or taste.

Recently, some researchers had 48 subjects memorize nonsense syllables while drunk. When sober, these volunteers had difficulty recalling what they had learned, but they could recall significantly better when they were drunk again. Another scientist also observed amphetamine-induced excitatory, and amobarbital-induced, "inhibitory," state-dependent recall of geometric configurations. His volunteers both memorized and later recalled the configurations under one of the two drugs. However, while remembering from one state to another is usually called "state-dependent learning," extended practice, learning, or conditioning is *not* necessary for producing "state-boundness." On the contrary, a single experience may be sufficient to establish state-boundness.

Déjà vu experiences and the so-called LSD flashbacks are special cases of the general phenomenon of state-boundness. Note that neither focal lesions nor molecules of a hallucinogenic drug are necessary for the induction of a flashback—a symbol evoking a past drug experience may be sufficient to produce an LSD flashback.

It follows from the state-bound nature of experience, and from the fact that amnesia exists between the state of normal daily experience and all other states of hyper- and hypoarousal, that what is called the "subconscious" is but another name for this amnesia. Therefore, instead of postulating *one* subconscious, I recognize as many layers of self-awareness as there are levels of arousal and corresponding symbolic interpretations in the individual's interpretive repertoire. This is how multiple existences become possible: by living from one waking state to another waking state; from one dream to the next; from LSD to LSD; from one creative, artistic, religious, or psychotic inspiration or possession to another; from trance to trance; and from reverie to reverie.

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Control of States of Consciousness

Kenneth Gaarder

I. Attainment Through Control of Psychophysiological Variables

The purposes of this paper are to synthesize observations from a number of fields which lead to concepts of control of state of consciousness through control of psychophysiological variables and to provide an overview of these concepts of control.

Homeostatic Adaptive Control Systems (HACS)

The necessity of using feedback-mediated adaptive control mechanisms as a cornerstone of physiology is well recognized even though much work remains to be done on the specifics of such mechanisms. Taken broadly, the homeostatic adaptive control system (HACS) idea can be thought of as saving that one overriding purpose of all psychological and physiological mechanisms to ensure the survival of the organism or of its own kind. The major means used by the HACS is to have feedback control the value of essential psychophysiological variables to keep them within critical limits. Thus, from the viewpoint of cybernetics, any understanding of a psychological mechanism is incomplete if it does not explain how the mechanism is adaptive, how it uses feedback, and how it maintains essential internal variables within acceptable limits.

In order to translate these generalities into more concrete terms, we may make use of Fig. 1, which summarizes the HACS functions of the organism in the form of information flow diagrams. This diagram can be thought of as specifying the relationship between the environment and the designated components of the organism. Each box in the diagram represents a particular system, while each arrow represents the communication chan-

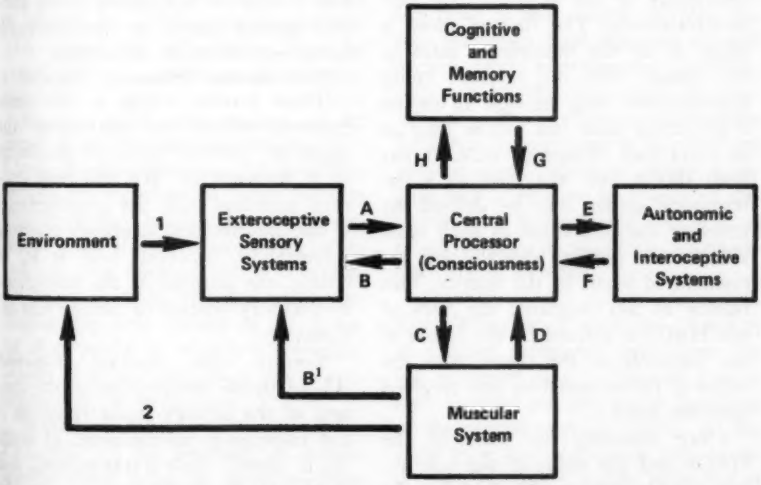

Fig. 1. Flow diagram of the homeostatic adaptive control system.

nels between two systems. Since all organs of the body may be put in one or another of the boxes as appropriate, the diagram is complete.

While it has long been appreciated that purely physiological systems, such as the heart-lungs-blood-tissue system are in a state of dynamic equilibrium, it is a less familiar idea to impose upon ourselves the injunction that the same must also be true of the information-processing system just described. This is, however, the demand placed upon us by our logic to this point. This requires that we imagine each box to have particular rates of input and output of information with particular compositions which must somehow or other result in the system as a whole being adaptive, being in homeostatic equilibrium, and being able to exert appropriate control.

State and Transformation

Having stated the idea of a balance within the HACS diagramed, it becomes possible to carry the analysis a bit further and posit two additional descriptors of the system—state and transformation. The first of these is taken to be the momentary state of the system, with the moment being appropriately long enough to define a particular state but not so long as to encompass change of state. It has been shown how the state of a determinate system can be defined by knowing the last value of each variable of the system, plus the last increment of input to the system. This means, at any moment, the *state* of our HACS is defined by the values of the variables in the boxes, plus the value of the information just received over the arrows.

Once knowing the state of the HACS and the value of the new input, we are able to identify what the new state will be. The process of reaching the new state is *transformation*—the going from one state to another. In a broad sense the history of the HACS is a chain of states with the change from one state to the next being the transformations. Merely noting that sometimes the transformation may be from a particular state to the same state allows for a flexible notational system covering enduring states as well as constantly changing ones.

We have now arrived at a basis for representing the behavior of an organism as a chain of psychophysiological states with the changes between states being represented by transformations. Any particular state may be defined by the process of designating the values of the variables of the systems in the boxes and the nature of the information in the arrows representing information channels between the boxes.

Homeostatic Control Links

I will now define the control links or information channels, as shown in Fig. 1 with the description of the control systems joined by the channels being implied in the definitions.

Environmental Influences (Channel 1)—These involve things in the environment which impinge upon the organism, whether primarily as energy or as information. We will only concern ourselves with the impingement of the environment as energy carrying information, however, and it is, of course, the purpose of the exteroceptive sensory systems to convey this information.

Sensory input channel (Channel A)—A major determinant of the content of the sensory input channels is the impinging environment. If nothing is "there," little is transmitted, and if too much is "there," it may be nearly impossible to turn it off. These

channels convey only that from the external environment to which the sensors are capable of responding.

Sensory input feedback control (Channels B and B^1)—Feedback mechanisms to control sensory input exist which are now being studied at the neurophysiological level. One manifestation of these mechanisms is the capacity to focus attention selectively from one sensory modality to another and to attend selectively within a particular modality to a particular part of the environment.

Muscular control (Channel C)—The commands of the brain to the muscular system are carried over this channel. An example of differences in quantity of information transmitted over a channel is provided by comparing the activity of muscle nerves while relaxing versus the activity during motor tasks. An example of differences in quality of information transmitted over a channel is provided by the enormous difference in requirement for complex control between maintaining posture and tonus with the expenditure of the same amount of energy in a highly complex motor task where the information must be contained in a more complex structure.

Feedback to the Environment and Effector of the Environment (Channel 2)—Once the commands to the muscular system are transformed by the muscles into muscular actions, they then impinge upon the environment as information. Our diagram shows concretely the often unappreciated truth that almost the only output of the brain to the world is muscle movement, which is power amplified and therefore apt to be disjunctive.

Muscle feedback (Channel D)—Channels for the feedback of muscle performance exist in proprioceptive fibers in muscle, as well as in other interoceptive and exteroceptive receptors which reflect what the muscle has done. An example of how this operates is provided by the stretch reflex. By passively flexing a joint so as to stretch a muscle, muscle firing can be elicited in the muscle. This means that a positive feedback has been established where increased tension on the muscle is signalled centrally to cause the return message of still further increase in the tension on the muscle by muscular contraction "ordered" from centrally. An example of change of state is provided by the decoupling of the muscle feedback so that during sleep or deep relaxation no such reflex contraction occurs.

Autonomic control (Channel E)—Central control of various autonomic functions is exerted through the autonomic control channels. Of course, there is also a great deal of autonomous or local control of these functions as well.

Interoceptive and autonomic feedback (Channel F)—These are the nervous channels which convey information about the state of visceral functions to the central nervous system. Although these channels are well known from experimental evidence, they are for the most part not considered to impinge upon consciousness. Evidence from autogenic training and yogic training, however, makes it appear this is because of a lack of discrimination learning and not because of an intrinsic impossibility of perceiving visceral function.

Central nervous system information flow (Channels G and H)—Analogy to current computer technology has led to designating a "central processor" to carry out the major functions of the central nervous system. At the same time, the content of the stream of consciousness is highly reflective of a part of the functioning of a central

processor. Channel H represents the command of the central processor calling for cognitive and mnemonic activity, and channel G represents the elicited cognitive or mnemonic material presented for central processing and is apt to be associated with consciousness of thought or memory.

Control of State Through Control of Inputs

In what is called "law of experience," a system can be brought to a desired state by controlling the input over a sequence of varying steps (i.e., through several states and transformations). We will concentrate on control of the information channels (input parameters) as the major mechanism in control of state.

Control of Sensory Input (Channel 1 and Channel A)—The extensive literature on sensory deprivation is concerned with methods which reduce the input to the exteroceptive sensory systems (channel 1) and thereby reduce the output of these systems (channel A) to the central nervous system.

A less-known method of reducing exteroceptive sensory input is through the use of a drug (phencyclidine) which has a specific blocking effect on the thalamic nuclei, where sensory input (channel A) is received by the central processor. Again, a profound alteration of the state of consciousness is produced. Another method of controlling exteroceptive sensory input is by sensory overload, where all modalities are maximally stimulated.

Control of Sensory Feedback (Channel B)—Another method of controlling sensory input is by controlling the feedback to the sensory system. One example is selecting the content of the visual world by means of the feedback of eye movements. Thus, in order to avail oneself of the sensory input of a printed page, one must engage in a highly programed feedback activity of scanning the page with eye jumps and fixations. Without the use of this feedback control, the structured input cannot exist. By using sensory feedback in this particular way a person is altering the balance of information flow so as to produce a particular unique psychophysiological state.

Control of Muscle Tension (Channel C)—The range of issues in the control of muscle tension extends from the use of the muscular system for complex motor tasks, includes the use of muscle tension in the maintenance of character armor, and reaches to the achievement of (nearly) total relaxation in deep muscle relaxation therapy, and to the total muscle relaxation universally achieved in sleep.

Researchers have shown how some individuals virtually live their lives within a particular state of muscle tension commonly involving specific rigidity of postural tone and facial expression. A study also reviews how the muscle tension chronically inhibits the flood of painful memories which return if the individual relaxes. Thus, in these individuals we see two distinct states—"before" and "after." Before the relaxation the memories are not accessible to consciousness and after relaxing a psychological reorganization takes place.

Some scientists have found that anxiety cannot exist in the presence of deep muscle relaxation. Thus, it appears that minimal activity of channels C and D precludes the existence of anxiety and that one empirical treatment of anxiety consists of simply reducing muscle tension.

Sleep is the other state in which complete muscle relaxation is achieved and is readily seen to be a unique psychophysiological state with its own unique organization. Many interesting

transformations are regularly programed—the change from waking to sleeping state and the changes from one state to another within sleep.

Control of Muscle Feedback (Channel D)—One of the most potent methods of controlling muscle tension utilizes the monitoring of proprioceptive feedback from the muscular system. Various studies imply that the reason we are not able to control muscle tension is that we are not able to recognize it. This is the "Great Truism of Information Theory"—that a variable cannot be controlled unless information about it is available to the controller. One of the major functions of muscle relaxation training is the discriminative learning of the recognition of muscle tension level. Further, external feedback techniques take advantage of this issue to provide another way of learning control more rapidly.

Control of Autonomic Variables and Control of Interoceptive and Autonomic Feedback (Channels E and F)—By the very token of these functions being autonomic, they tend to be outside of consciousness and, therefore, their feedback is not readily available to consciousness without discriminative training which most of us have forsworn. Likewise, because many of these automatic functions must be carried on in one form or another regardless of other activity and because their activity does not usually set the stage for the state of the organism as a whole as vividly as do sensory and motor activity, clear examples of domination of the organism by autonomic functioning are not seen.

Yogic control is a major instance of autonomic control which is being frequently verified by experimental observation, so that conscious voluntary control of heart rate, skin temperature, intestinal peristalsis, and so forth by trained adepts is now readily acknowledged.

Deranged control of autonomic variables as an operationally valid concept having etiological and therapeutic importance is also becoming evident in such diseases as essential hypertension, where a useful understanding can begin by thinking of the disease as primarily a regulating mechanism somehow set at the wrong level.

Control of Cognitive and Mnemonic Variables and the Control of Their Feedback (Channels G and H)—Because these variables are not yet available to direct observation through any other agency than introspective consciousness, not as much of a clearcut nature can be readily said of them as of the other systems. Also, we are now into the area in which the other systems can readily be made to dominate this system by their activity. Cognitive and mnemonic functions are highly dependent on the state of the sensory and muscular systems. One can define as necessary for cognition and memory a certain lowering of sensory and motor activities below critical limits which would interfere too much.

Control of State Through Complex Control of Information Channels—By now the point has been well established that the earlier examples of control of state through control of a single channel are oversimplified and that in every instance the true nature of the situation is better defined by a specification of the information on all of the channels. In addition, some physiological variables which reflect overall activity, such as arousal level, are appropriately considered as being made up of an "average" of the activity in all of the channels.

Yogic asanas—In the typical yogic asana (posture) particular muscle groups are placed under tension. This

elicits the stretch reflex, which consists of the stretching of the muscle through assuming a particular posture; the feedback proprioceptive signal of the stretch (channel D); the central processing of this information; and the "reflex" of muscle nerve firing in the same group, resulting in muscle activity in that group (channel C). Thus, the asana has an alerting effect through the effect of this cycle of activity on the reticular activating system.

Yogic or Zen meditation—Meditation not only has the effects of the meditative asana just discussed, but in addition the sensory system (channel A) is put into a state of relative deprivation and stereotypy by being in a quiet calm environment and by using sensory feedback control (channel B) to focus on a single potential input in a single way. Cognitive and mnemonic functions are consciously controlled by voluntarily limiting the content of thought, usually in a stereotyped way.

Yogic autonomic control—Once all of the above preconditions are fulfilled, it appears possible to focus the attention consciously upon a specific autonomic function and thereby gain control of it. The fact that our lack of training makes these things virtually impossible for most of us to achieve should not keep us from acknowledging their reality in others.

Free associative state—Any mental state has a unique psychophysiological state accompanying it, which can be fairly well defined by defining the content of the information channels. This is true of the psychoanalytic free associative state. Work on muscle relaxation as a precondition for recall of a painful memory defines the content of the channels to and from the muscular system (channels C and D) and the quiet, softly lit room (channel 1) helps to determine the sensory input (channel A). The defining characteristic of the free associative state would be the ready availability of free-floating thought and memory (channels G and H), but it cannot be achieved without first controlling the muscular and sensory systems.

Control of State Through External Feedback—Consideration of our model to this point makes obvious another method of gaining further control of the state of the organism, which is to provide an external artificial feedback channel by measuring a particular psychophysiological variable and providing information about the variable to the organism.

II. Attainment Through External Feedback Augmenting Control of Psychophysiological Variables

This section is entirely concerned with the use of external feedback as a means of controlling psychophysiological variables. The basic idea behind this technique is that by artificially (usually electronically) measuring some psychophysiological variable (thereby making it an "output") and then feeding it back to the subject producing it through a sensory channel (thereby making it an "input"), the subject has available the possibility of gaining control of the variable. For example, if the electroencephalogram (EEG) is measured in the usual way with skin surface electrodes and electronic amplifiers, and if the EEG signal is then processed to cause a signal to be given whenever alpha rhythm is present, the subject learns to be able to cause alpha rhythm to be present or absent when he wishes.

The great truism of information theory—The essential principle upon which this technique rests can best be stated as *a variable cannot be controlled unless information about the*

variable is available to the controller. When the variable to be controlled belongs to the controller and when information about the variable is presented to the controller, this completes a feedback loop. Although some beginnings have been made at providing a more rigorous analysis of psychophysiological feedback than the elementary one just given, there is not yet a great deal more known about the matter.

Early history of external feedback—Such an easily achieved goal as the artificial closing of an external feedback loop has occurred many times without the formal logic of its occurrence being necessarily appreciated. The feedback provided by a mirror is used daily when men shave and women apply makeup and is used by a school of German physiotherapists to train self-awareness.

Completing an external feedback loop electronically has been practical for about 50 years and it is of interest that one of the first things done with the EEG was to observe one's own alpha rhythm and how it was affected by eye movements. Another example of early use of feedback was by researchers who placed a microphone to pick up a patient's respiration and heart beat and used the amplified playback to induce a hypnoid state.

Current history of external feedback research—It seems valid to divide the current history of external feedback into two phases. In the first phase, several investigators used the principles of external feedback without an explicit recognition that a new principle had been discovered, while in the second phase it began to become clear to these investigators and to others that new principles did indeed exist and the explicit recognition of the principles became an end in itself. One of the earliest uses of feedback was in the use of the electromyograph (EMG) as a means to feed back information to patients in teaching muscle relaxation in the early 1950's. Another early worker found in the late 1950's while studying alpha rhythm that his subjects were able to control a signal he was providing them of the presence of their alpha rhythm. During the early part of the decade of 1960 a number of other people became interested in the study of feedback and each may be credited with having had creative insight into feedback and the recognition of a new principle.

In the latter part of the decade of 1960 many more people began to study external feedback and there are now over 100 investigators in this country so involved. In 1969 a scientific meeting was held in Santa Monica, Calif., at which a Bio-Feedback Research Society was formed to bring together people doing research in the area. Meetings are expected to be held yearly in connection with the Society for Psychophysiological Research.

Feedback framework vs. operant framework—The evolution of operant conditioning can be viewed as a form of feedback. For example, if it is desired to train a pigeon to tap a key, he is gradually "shaped" into tapping the key by rewarding any activity which brings him closer to the key or to tapping the key. This is a feedback because doing the thing which is desired produces external information which is different from the information produced by not doing the desired thing. The fact, however, that operant conditioning is a form of feedback is often not recognized and for the most part there has not yet been much cross-fertilization between the field of operant conditioning and the field of feedback nor is there yet

rigorous and comprehensive analysis of operant conditioning in terms of cybernetics.

Parallel to the development of external feedback referred to above, a scientific group has done extensive work in animals showing that psychophysiological variables which had been thought by some to be uncontrollable can in fact be controlled. The essence of the technique is as described above. Using this technique the group has found it possible to control many autonomic variables.

One major factor appears to differentiate the feedback of operant conditioning from other feedback. That factor is what might best be called the *valence* of the feedback. Whereas in other techniques (which are used mainly with humans) the information is usually fed back in the "neutral" form on a dial or other display, in operant conditioning (which is usually with animals) the information is fed back in the form of a compelling reward or punishment and thereby given a motivating value to the subject. At such point as we understand how to provide the kind of compelling valence to feedback information which is achieved in conditioning experiments without treating the subject in a demeaning manner, some important advances in the use of feedback might be expected.

Method of External Feedback

The method of external feedback can best be summarized by saying that it is deceptively simple and in that simplicity lies its success or its failure. When a particular psychophysiological variable is continuously measured, usually the resultant measurement is a fairly complex signal containing a great deal of information. Most often simply presenting the raw signal to the subject as a feedback would overwhelm him with irrelevant information. Thus, in EEG feedback control, progress was begun by filtering the raw signal for alpha rhythm to feed back to the subject the information of whether alpha rhythm was present or not. One must have recourse to an elementary classification of signals to designate them as continuous (digital). Then, among the alternatives are feedback signals which merely say whether an immediate criterion level of alpha is present or not; show both the presence of alpha and its amplitude; show the amount of alpha in a recent short epoch; or show the percent of time a criterion level of alpha was present in a recent short epoch. When it is further recognized that the signal may be fed back in one of several sense modalities and that the signal may be scaled into one of several dimensions of that modality, such as pitch or volume, it can be seen that the problem of choosing a feedback is not simple at all.

EEG feedback—The most extensively studied area of feedback is in the EEG. Here it is found that subjects are quite readily able to learn to produce large amounts of alpha in their occipitoparietal or occipitotemporal EEGs. They quite uniformly associate alpha with a pleasant state of mind which is relaxed, quiet, slow, and tranquil as contrasted to the state with beta (low voltage fast) activity which is more alert, fast, aroused, and restless.

Among the fascinating problems raised which are beginning to be studied are those of comparing feedback-induced high alpha states with those induced by yogic or Zen meditative techniques; comparing occipital alpha with alpha from other parts of the brain which is more difficult to control; seeing how far alpha frequency can be slowed and speeded

and the effect of so doing; seeing the degree to which high alpha and high beta states are mutually antagonistic versus the degree to which they can coexist; and seeing if other brain activity such as theta or 40-Hz waves can be controlled. Work has yet to be reported showing what effect learning to control alpha states might have upon long-term anxiety syndromes and what aspects of defensive states are compatible and incompatible with high alpha states.

EMG feedback—The predominant reason for pursuing the study of EMG feedback has been the finding that complete muscle relaxation is incompatible with anxiety. The issue is to see whether deep relaxation can be learned more readily with EMG feedback than without, and so far several studies have pointed in that direction. The technique is simpler than in EEG feedback because so far only a single dimension of muscle activity—the short-term averaged EMG—has been used. Even here choices must be made between binary, digital, or continuous signal processing; between linear and logarithmic scales; and between auditory and visual displays. Electrode sites must be chosen from which to measure muscle activity. There is also the alternative of measuring postural muscles which reflect postural tone versus facial muscles which reflect a "psychosocial tone."

Rather limited work suggests that most people who achieve fairly deep relaxation do not enter a radically altered state of consciousness, but that a few subjects who have previously experienced altered states of consciousness from drugs or meditation may show facility for relaxing even more deeply and achieving an altered state similar to the alpha state from this still deeper relaxation.

Autonomic feedback—A large number of studies, mostly employing operant techniques, have shown that it is possible to use feedback to gain self-control over various aspects of the autonomic nervous system, especially the cardiovascular system. The galvanic skin response (GSR) is another autonomic variable which can be fed back to the subject, and has been found to add a useful dimension to psychotherapy.

Possible Applications and Limitations

Treatment of specific disease—Feedback has some obvious potential uses in the treatment of disease. One simply considers a disease in which the pathological alteration of a physiological variable is an integral part of the condition, and then uses feedback as a means of learning to return the variable to normal limits. Among the possibilities are the treatment of hypertension by feedback control of blood pressure, the treatment of vasoconstrictive peripheral vascular disease by the feedback learning of vasodilation, the treatment of anxiety by learning deep muscle relaxation through feedback EMG, and the treatment of epilepsy by feedback EEG teaching the suppression of spike activity. So far, the major therapeutic use of feedback has been in the treatment of muscle tension.

Feedback in psychotherapy—Where a patient's disease is not clearly related to a specific derangement of psychophysiological variables, there are several approaches which can be used. One would be to use feedback to teach the achievement of psychophysiological states which are considered desirable in themselves. This might be done either as a treatment per se or as an adjunct to another treatment procedure. According to the

claims of the adherents of Yoga and Zen there is an intrinsic hygienic value in being able to achieve deep muscle relaxation and altered states of consciousness associated with alpha rhythm. On the other hand, it appears likely that feedback techniques might supplement and facilitate other treatment techniques. In psychoanalytic psychotherapies many patients are too anxious to be able to cooperate usefully in the necessary intellectual work who might perhaps be helped by relaxation with EEG and EMG feedback. Thus, feedback might help patients to achieve the psychophysiological state accompanying free association.

Another use of feedback in psychotherapy is as a source of objective information about the body state which would otherwise go unnoticed. It has been found that the occurrence of GSR was related to rapidly passing mental states which occurred while defensive operations were put into effect and that the noticing of this by both the patient and the therapist had a useful role in the treatment.

Limitations of feedback techniques—It must be recognized that there are as yet no definite studies unequivocally proving the value of feedback and it is quite possible that feedback will be found to have no great usefulness in the treatment of disease. This must await further study and replication by different investigators.

When studies are done, it is clear the investigator must be aware of a number of issues in order to design useful experiments. One of these is the design of apparatus which optimally achieves the particular use of feedback desired.

From this issue one progresses into the issues mentioned earlier of the specific property of the signal from which the subject can most easily achieve the desired result. This leaves the multiple choices of picking the desired variable, picking the specific property to be displayed, picking the sensory modality for the display, and picking the quality within the modality to express the signal. Because of the large number of variables to be considered in experimenting, it seems desirable to use pilot studies to determine the most promising directions in which to proceed and then do controlled experiments to validate hints from pilot work. In addition, there is the problem of whether one can combine simple feedback techniques so as to give a suitable valence to the information without at the same time introducing undesirable elements into the procedure.

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On the "Principles of the Heart" and the Psychiatric Insights of Zen

Iiza Veith

In most cultures known to us, the origin of medical activities is traditionally attributed to the powers of one or several divine figures. Although the belief in divine ancestry of medicine has left but vestigial remnants, Christ's healership is still a potent influence in Western medical thought and practice. In most other cultures the art of medicine has only scanty connection with religious and legendary origins. Yet in one case, that of Buddhism, a direct link between the original religious superstructure and an existing therapeutic method is still recognizable. The arcane form of Buddhism, known as Zen Buddhism, is a kind of religious meditation that is best known to the West by the Japanese word "Zen." Meditation in Zen is not only a means for achieving ultimate Truth but also an end in itself—it is truth in action.

Whereas other Buddhist schools have relied mainly on certain texts of the scriptures, Zen forgoes literary bridges and, rather, transmits teaching "from mind to mind"—that is, from the master directly to his disciple without the intervention of rational argumentation or formulation in conceptual terms. Above all, Zen is a religious discipline that requires complete submission to the will of the Master, who alone can guide authoritatively and ensure the correct transmission of the Truth. Zen teaches "becoming a Buddha just as you are," believing that "Buddhanature" is inherent in all human beings and can be seen through meditative introspection. To attain Buddhahood, the great Zen masters advocated "absence of thought" so as to free the mind from the bonds of the external world. They also taught the need to ignore one's feelings, which is the essential element in the psychotherapy that has evolved from the doctrine.

The two basic tenets of Zen Buddhism are the importance of nature and life in and with nature, and immersion of the individual in the family, the group, and the community. Deviance from these tenets are deemed an alienation from the religious and social aspects and also from the point of view of mental health in general.

Because the results often were surprisingly fortunate, a Japanese physician, Shomei Morita, conceived the idea of extracting the essential elements from Zen conduct and constructing from them a form of psychotherapy. Thus it was that Morita therapy was born. Its first major element is the combating of the egocentricity that is the most striking symptom of the patient's neurosis. The second element of Morita therapy is the correction of the patient's alienation from nature because dependence upon, and love of, nature characterizes the Japanese in physical and emotional health. It is remarkable, of course, that there should be a form of therapy that "aims to restore" love of nature and abolish egocentricity; it stands to reason that both these major emotional adjustments can be achieved only with the iron discipline that is practiced in the Zen communities.

Regardless of the age or sex of the patient, Morita therapy follows a specific schedule, or ritual, on which recovery is said to depend. Upon his arrival at the hospital, the neurotic

patient—overt psychotics are not accepted—must have complete bed rest for as long as a week. During this time he is not permitted to associate with anyone else. He must not read or write, smoke, telephone, or watch television. The patient is left alone with his illness until he and his illness become one. Subsequently, the patient is gradually restored to the world. He is encouraged to engage in work in the garden surrounding the hospital. This, however, is not what is known as occupational therapy; rather, it is intended to encourage the patient's emotional return to nature. Gradually, the patient is permitted renewed contact with other persons. Rather late, he also meets with the therapist on a walk through the garden, during a game of table tennis, or during a similar diversion. There is no occasion for the patient to bare his soul, because that would only serve to reinforce the egocentricity that is the essence of his neurosis. Later on when the patient is given the task of keeping a diary, he is enjoined to refrain from recording anything that relates to his emotions or to his illness. The patient must learn to associate with his fellowmen without friction, and to perform his work as best he can, even by the standards of healthy society. He must never in the course of his treatment be permitted to think of himself as an emotional invalid or as different from the rest of the community.

It is clear that this tightly scheduled mode of therapy, a rigid form of reeducation, is an outgrowth of a basically different concept of mental health and disorder than that underlying Western therapy, which is derived from such loose and undefinable concepts as psyche, spirit, or soul. In a modern Japanese dictionary, we find the character "shin" to mean "core," and in the pronunciation "kokoro" to mean "the heart"—that is, the center of sensations and emotions or the "mind." And the word for mental phenomena that would correspond with the prefix psych is "shinri," which may literally be translated as the "rules or the principles of the heart."

The linguistic holdover of an ancient physiologic belief is no longer meaningful to the Japanese mental scientists; yet the "rules or the principles of the heart" do have a meaning in the context of Zen philosophy and Morita therapy. Because in Zen thinking these are rigid and immutable rules, it was possible to integrate them in a psychotherapeutic system, such as that of Morita. Thus, it happens that the Sino-Japanese demands of Zen are simply the literal interpretation of "shinri" or the "rules of the heart," which are, after all, the valid characters for psychotherapy.

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What is Mu?

Durand Kiefer

The state of consciousness that has been called trained-transcendent can result from an experience that the Zen Buddhists call Kensho or Satori. The characteristics of Satori are so similar to those described as the mystical consciousness that the latter may be used as a guide in recognizing the former.

The Zen Master, Hakuun Yasutani, an 84-year-old Japanese, has authenticated, by a brief post-sesshin ceremony, the achievement of Kensho by several Americans during several sesshin—Kensho has varied greatly with the individuals in each case, and all have been relatively shallow compared to the maximum transformation of consciousness that is possible in Satori.

People attend Yasutani's sesshins for various reasons, but while they are there the Roshi considers each person to be a serious student of Zen Buddhism, and he expects him or her to have put aside all other interests and business before arriving at the sesshin, and while there to devote his entire attention to wholeheartedly following the instructions of the Roshi, without contention or question. Upon arrival each student is given an instruction sheet which asks him not to read, write, or speak (except to Roshi) or play music during the sesshin, nor to distract other students from their practice, by the usual social amenities, and to keep the eyes always lowered so as not to meet the eyes of others or to be caught up in the scene, and do nothing to interrupt his single-pointed concentration on the learning that he has come to acquire.

At his first dokusan (private interview) with the Roshi, each student is first asked why he has come to the sesshin. The Roshi sorts his answer into one of four general categories and conducts each student's subsequent instruction accordingly. The four categories are (1) to escape the pressure of everyday affairs and repair its ravages to the nervous system; (2) out of curiosity, to learn something about Zen Buddhist practices; (3) out of an intellectual appreciation of Zen philosophy, to learn how to apply it in everyday life; and (4) out of a deep dissatisfaction with ordinary consciousness, to seek, or to renew, the Zen enlightment experience, or revolution of consciousness, called Kensho or Satori.

If the student confirms that he wants Kensho and it is his first try, the Roshi generally assigns him the Koan, *mu,* in the form of a mondo or Zen parable that goes, "A monk asked Joshu (an ancient Chinese Zen Master), 'Does the dog have Buddha-nature?' Joshu replied, '*mu.*' The Roshi then asks, 'Now what is the meaning of this *mu?*' " The Japanese *mu* translates as "nothing" or "emptiness" in English, with neither a negative nor a positive connotation, but this is of no help whatsoever in answering the Roshi's question. He makes it clear at once that no answer that the student can arrive at by thought or imagination is correct, so he must discover some other resource from which to answer, and this is his sole task for however long it may take.

It is customary for the Japanese Zen Master to let each student find his own way of arriving at a non-conceptual solution of his Koan by a process of trial and error that normally takes many years, including many sesshins. In the farewell lecture that closed his last sesshin in the United States, Yasutani took the oc-

casion to spell out with unprecedented candor and detail exactly how to "work on" the Koan, *mu,* to achieve a Kensho experience within 4 to 7 days. The Roshi began by saying that the procedure was very simple, but very difficult, reminding us that we asked to accomplish something in 7 days which ordinarily took 10 to 20 years. To do this, the Roshi said the student must *become mu* as quickly and directly as possible and maintain this identity for a considerable time until teased or shocked out of it by the Roshi in dokusan.

Yasutani Roshi explained that by "becoming *mu*" he meant continuously having no awareness of anything but *mu* at every moment whether awake or asleep. Thus to establish *mu* as the total content of consciousness at every instant it was only necessary to constantly repeat the syllable, *mu,* silently and rhythmically, with force, determination, and persistence while keeping continuously in mind the question, "What is *mu?*" This dual action could be firmly established as a persistent, unconscious habit within 3 days by forcefully practicing it during the numerous half-hour periods of zazen (sitting meditation) every day of the sesshin.

This sitting practice of *mu* consisted of keeping the neck and spine straight and vertical while seated with crossed legs on a cushion on the floor (or in a chair with feet flat on the floor) facing a wall about 3 feet away with eyes half open and directed at the base of the wall with hands folded in lap, and with the rest of the body, especially the shoulder-yoke, wholly relaxed to gravity except for a conscious tensioning of the *tanden,* or abdominal wall about 4 inches below the navel, with each exhalation of breath.

In addition to a most energetic persistence in concentration of attention upon repeating the syllable *mu,* a mood of earnest intention (called Zen concentration) must be made at all other times while awake, and especially when composing oneself for sleep. The uninterrupted practice of this childlike concentration upon a Koan exercise is called "carrying a Koan."

Among the obstacles which make the simple practice of the Koan, *mu,* so difficult, the most common is laziness, or simple lack of interest, energy, and determination. The next is a subtle trick of the ego which substitutes for these a ridiculous mixture of ambition and pride by frequently dangling before the mind's eye the carrot of an imaginary heaven called Nirvana, alternating with elaborate analytical speculations on personal progress toward this goal, complete with erudite diagnoses of one's mental and spiritual state, employing all the psychological, mystical, and esoteric terms in an extensive vocabulary acquired from months or years of reading and talking about Zen and other mystical disciplines.

On the other hand, if his simple instructions for working on the Koan, *mu,* are adhered to with the three universal requisites of Zen practice, Great Faith (aimless devotion), Great Doubt (earnest inquiry), and Great Determination (desperate persistence) by anyone whomsoever, the correct solution of the Koan by the realization of Kensho experience is "inevitable" within 4 to 7 days.

But what is *mu?* To an aged student who has taken this Master's path a dozen times in a half-dozen years without ever quite reaching the utmost peak, the fierce climb is experienced much like this:

For the first few hours *mu* is a silly syllable. Soon enough, however, one's religious erudition comes to the rescue and he recognizes that "identity with

mu" and union with God, Brahman, Tao, or Allah are undoubtedly all the same experience with almost identical instructions in the different religious vocabularies for achieving it.

The word-equation is of no help except to convert the Koan practice from embarrassing animal imitation to an exalted form of *mantra* practice called *japa,* repetition of the Holy Name. For the remainder of the first day it is not too difficult to practice *japa* with *mu,* occasionally substituting God, Rama, Allah, Tao, or Om, with such familiarity that the Spirit of Inquiry is totally forgotten and the tensing of the *tanden* nearly so.

The second morning brings a sober return to earnest practice of the triple-discipline: *mu,* humble query, and *tanden*-tension. By the end of the day *mu* has become *nada,* a soundless rhythm at the deepest level of consciousness in synchronization with exhalation of the breath; only occasionally with *tanden*-tension, as these muscles are becoming fatigued.

Early on the third day the will as well as the body begins to fatigue and by noon a black frustration from inability to stem the "idiot monologue of the mind" alternates with a bottomless boredom with the effort to do so. *Mu* is frustration, boredom, and irresistible drowsiness, and nothing else. *Mu* becomes complete misery and remains so until late in the evening or sometime the next day.

By then, *mu* has "bottomed-out" of misery and become pure, excrutiating, exquisite pain, not only general but also particular, usually in a single muscle of the back or one leg. When this particular pain becomes entirely intolerable but is relieved for only a few seconds by movement, there comes a moment when there seems to be no alternative but to "accept" it and live with it motionlessly. At this moment there is a lapse of consciousness that is not sleep, and when it is passed, all pain has gone and the offending member feels either absent or turned to stone. *Mu* is vast relief and gratitude, shortly turning to a warm comfortable glow "4 inches below the navel," where the *tanden* is effortlessly breathing *mu* without direction at the rate of two or three times a minute, while the entire rest of the body has simply "fallen off" along with "the mind." Perhaps, if this peace would simply deepen and endure until it could be presented to the Roshi at dokusan, he might test it with a few sharp questions and if it survived, convert it to Kensho. But although the view from only near the top of the nonexistent Zen mountain is not complete, it is still breath-taking, still quite ineffable and always well worth the climb, no matter how arduous nor how often. For the Americans who seek *mu* now, the answer to Joshu's Koan probably lies in America's psychophysiology laboratories, where *mu* has been several times briefly encountered in instrumental feedback experiments.

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Reprints from Commander Durand Kiefer, U.S.N. (Ret.), P.O. 219, Wailuku, Hawaii 96793

Effect of Divorce on a Child's Personality Development

Jack C. Westman

Divorce in reality is a family matter. Three of four divorces occur in marriages with children, ordinarily when children are young. The relationship of divorce to the personalities of affected children, particularly their sexual development, deserves careful study. Since divorce implies not only an error or change of circumstance in the marriage but also problems in the sexual relationship of the parents, one can assume that affected children resonate to both the process of divorce and the personalities of the parents who must readjust their intimate lives.

Development of Gender Identity

Widely held assumptions suggest that divorce contributes to at least several recognized social and clinical problems. But a series of more basic considerations arises as one attempts to link these phenomena with sexual or, more accurately, gender identity.

There are several basic ingredients essential to the development of an adequate male or female identity. First, the infant establishes a sense of his own body through moving away from a close relationship with his mother. Then, during the second and third year of life he establishes himself as a person through his discovery that he has a will and a mind separate from his mother's. During that time there is a growing recognition of the father as a source of both fulfillment and frustration. After establishing the separateness of his body and his personality, the child next moves to full awareness of being a boy or girl during the fourth, fifth, and sixth years. In the elementary school years the child further refines a sense of what kind of boy or girl he or she is through development of skills and talents. The adolescent years more firmly establish one's total identity in the world outside the family. The importance of outlining these steps rests in the need to establish the time in a child's life when the divorce process occurs, since divorce clearly means different things to children at different ages.

Importance of the Father

It has been discovered that young children without fathers developed detailed images and stories about fantasized fathers. In the absence of contact with their fathers, the children manufactured idealized father images. Also, the child's own view of himself has an unrealistic quality in that he is identifying with a myth, uncorrected by regular interaction. In divorce situations this is often reinforced when the only contact a child has with his father is for fun-filled occasions. This distorted situation only feeds an idealized view of the father and manliness, and promotes an unrealistic sense of masculine omnipotence in a boy, who may already have become the "man of the house" with his mother.

For the girl the same considerations apply, although she does not rely upon another person, her father, to make the shift from an identification with her mother, as does a boy. Her reliance upon a masculine figure is for strengthening the maleness in her bisexuality and enhancing her femaleness through being recognized and reacted to as a girl by her father. A mother cannot fully bring out her daughter's femininity, although she

obviously serves as the principal figure for identification.

Not only do children grow through interaction with their parents, but parents mature through each child's progressive stages of development as the child reactivates issues lingering from the parents' childhood. Divorced fathers need their children too. Lack of contact with one's child tends to lead to idealization of the child by the absent parent, reflecting the reverse of the child's idealization of his absent parent.

Timing of the Divorce Process

Divorce is not an event; it is a process or, better, a "way of life." Divorce does not "end everything," as so many discover after the fact. Divorce only alters the nature of family relationships. In many instances the conflicts leading to the divorce persist afterward. Often children who were the center of disagreements before remain pawns in parental maneuvers after divorce. It is not possible, then, to do more than roughly relate the timing of the divorce process and its effect on a child during a particular stage of development.

Infancy—During infancy the mother is the primary child-caring figure. Divorce taking place during this period of life usually has only indirect effects on the child; however, in some instances they can be critical. For example, a mother preoccupied with her troubled marriage may be depressed and unable to meet her child's need for succor; or neglect of the child can occur, leading to either actual or relative maternal deprivation. The birth of a child, also, may precipitate the first extramarital affair or separation. There is the possibility that the child, particularly if a boy, may become the target of the mother's resentment toward the father, leading to mother-infant strain or child abuse in a physical sense. Another indirect source of difficulty is from older siblings who resonate to the divorce through displacing their own resentment and anger upon a more helpless sibling. These consequences can interfere with establishment of the foundation for the infant's later personality, namely his sense of comfort with himself, his body, and the world.

Early childhood—It is an unfortunate fact that divorces are most likely to occur when the influence of divorce on a child's personality development is the greatest: when young children are still in the home. Following the period of gaining a sense of personal autonomy, the basic templates for interpersonal relationships are fashioned through interaction with one's mother, father, and siblings during the oedipal stage. It is during this period that the father is most needed by both boys and girls.

During the oedipal period boys learn how to handle the frustration and disappointment accompanying their discovery that they in fact share their mother with siblings and a father. The anger directed toward father for his "intrusion" on the mother-son relationship is expressed and worked through on a day-to-day basis when there are opportunities to discover the advantages of being like father, and self-esteem building opportunities to have minor victories over father in small ways. With divorce, the departure of the father at this time confirms the son's fantasied omnipotence and power through fulfillment of the son's wish to eliminate his father.

Both boys and girls share an additional reaction that inevitably accompanies a father's departure. Leaving home, obviously, also means leaving the children. The natural self-cen-

teredness of children leads them to cling to an image of their own parents as a single unit. The wish generally held by young (and older for that matter) children is that their divorced parents will reunite, even when the realities of remarriage clearly make this impossible. The departure of a parent may be seen as a frustration of this wish and as a personal rejection. The guilt experienced by many fathers who leave their children often leads to overcompensation and efforts to make up for what the father, also, experiences as his rejection of the child. This can result in a blow to the child's self-esteem at a time during which being unacceptable to daddy, also, may mean being unacceptable as a boy or girl, undermining the child's sense of personal adequacy.

Since remarriage often takes place after a divorce, mention of the relationship between the children of both families is appropriate. The jealousy ordinarily accompanying sibling rivalry is accentuated when the children of two families either live together or relate to each other in separate homes. When differences in style of living are apparent, one can readily understand a child's wish to live in his daddy's "rich" home. Even when this is not the case, often "the grass is greener on the other side of the fence."

Whether or not the circumstances of divorce have an adverse affect on a given child is difficult to determine. One might assume that the more openly a child talks about his interpretations of the divorce process, the more likely he is to work them through satisfactorily. If significant events occur without external signs that the child is reacting to them, parents could be encouraged to draw out the child. Even more important, however, is the need to discuss in simple terms the realistic reasons for the child custody and visitation arrangements. Usually these facts are not mentioned, are merely presented as edicts from unknown heights or judicial power, or else are concealed from children. Fantasies run rampant in the absence of facts.

School-age children—At no other time is it more apparent that there are nonsexual aspects of masculinity and femininity than during the "latency" or elementary school years. Awareness of the differences between the sexes is acute as boys steer clear of girls, and girls despair of boys. At the same time, juxtapositioned with polarization are obvious girlish traits in boys and equally evident boyish interests and behavior in girls. During these years children are actively mimicking and identifying with significant adults of both sexes.

Modulation of the qualities of the "gentleman" and the "lady" in such a way that bisexuality comfortably permits one to live with the qualities of the opposite sex in one's self requires an apprenticeship with adequate models. The mythical polarized images of the "man" and the "woman" have been developed by the media and by a host of superficial people who have not had deep relationships with their own parents or their own children. It is easy to see, then, how children in one-parent homes are at the mercy of cultural stereotypes because of limited exposure to "real" identification figures of both sexes. It is the home with actual male and female parenting that provides an atmosphere in which stereotypes are not needed.

During the school years a feminine boy living in a one-parent home not infrequently comes to clinical attention. His need for masculine influence is obvious. Less easily recognized is the fatherless boy who overcompen-

sates by developing an all-consuming drive to prove his masculinity, either through rebellious, delinquent behavior or through preoccupation with success in a "hypermasculine" activity, often athletics.

The hurt experienced from a sense of rejection by the departing parent is actually more intense during these years, because the child is actively involved with identifying with his parents. The departure of the parent is interpreted as a personal loss and rebuff, because in fact it does signify that other considerations have priority over a commitment to an ongoing child-parent relationship. It is during these years that a depressive reaction in the child is apt to become clinically manifest, often showing as disinterest in school or withdrawn behavior. Girls in particular are prone to show disappointment in their father, and anger, also, because they have begun to entertain fantasies of their own future marriage and tend to expect that their father should be an idealized husband to their mother.

To avoid misunderstanding, it is important for divorced parents to establish a direct "hot line" rather than relying on intermediaries, such as attorneys, or unduly upon the reports of their children. This communication link actually is a part of their obligation to their children because the developing child needs a model of two adults working effectively together. Every effort should be made to preserve the model of adult cooperation. The lack of this model affects personality development adversely because the child tends to assume that manipulative power maneuvers are a useful life style; he then concentrates on developing skills for exploiting people rather than forming mutually rewarding interpersonal relationships.

School-age children should be informed as much as possible about the practical aspects of the divorce and post-divorce arrangements. They should not be expected to participate in the decisionmaking regarding divorce or custody, but they are old enough to have an important voice in visitation arrangements. It is around the visitation plans that the open channel of communication between parents is the most important and the most helpful in maintaining and maturing the continually changing parent-child relationships.

Adolescence—During the teenage years the process of divorce has the least effect on personality development, which in essence has already taken place. But here the most dramatic heart-rending experiences can occur. Depending upon the youngster, the factors considered during the previous section may well apply to the early adolescent years since the individual level of maturity during preadolescence and early adolescence is highly variable and defies generalization.

To look at the impact of divorce on the middle and late adolescent is to see divorce through the eyes of both an adult and a child. During these years the teenager has his own opinions, biases, and analyses of the divorce. He is sensitive to the social repercussions from the image of a divorced family, but in contrast with the younger child he actually can think in terms of others going through the same experience, and he can appreciate the benefits of the divorce to the adults involved, if they are obvious to him.

One of the reasons for the teenager's tenderness about his parents' divorce is related to the fact that an established family exists, and the repercussions of terminating that mar-

riage are more far-reaching than for a family with less of a life history of its own. Accompanying this fact is the embarrassment felt by parents, who even though they are resorting to divorce themselves strongly hope that this will not be a course followed by their children. Parents, therefore, feel a need for, and do have an obligation to, work through on a family and on an individual basis the process of divorce with their teenagers.

The impact of divorce on the teenager may be reflected through depression or grief, or may be accompanied by crisis situations. The physician is drawn frequently into potential, actual, or post-divorce problems in adolescent psychiatry. More often than not the disturbed adolescent brought in for treatment either signals a foundering marriage or the divorce plans of his parents. As might be expected the stormiest divorce situations occur with marriages of this vintage, and it is evident that the seeds for the divorce were sown long before, and are reflected in the personality development of the children in the family. The risk for the adolescent is less that personality is affected and more that actions will be precipitated that could have long-range effects on self-image.

Discussion

Because of the frequency of the divorce experience one can assume that most children are not adversely affected in a clinical sense, although more subtle repercussions are not known at this time. A case history survey of a child psychiatry clinic and a general pediatric service did not indicate that the incidence of divorce was higher for those children than for the population at large. It is likely that the experience of divorce constitutes stress and frustration that can strengthen coping skills, the capacity to master stress, and the general course of personality development. One, also, can assume that experience with multiple families has broadening social aspects, expanding the life experience of affected children.

At the same time it is safe to assume that much work needs to be done to ensure that divorcing couples and their affected children have the benefit of the knowledge and clinical help that will maximize the constructive management of divorce. Of great importance is the emerging need for *divorce counseling*, not only for the benefit of affected children but also to help divorced parents with significant post-divorce problems. The opportunity for effective intervention and the prevention of mental disorder because of the crisis nature of the divorce experience has been realized only dimly. We now have sufficient knowledge to bring basic counseling skills and support to divorced families.

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Reprints from Jack C. Westman, M.D., Professor of Psychiatry, University of Wisconsin Medical School, Madison, Wis. 53706

Epidemiology Versus Cartesian Dualism

Kurt W. Back

Modern science has dealt with ancient problems of philosophy mainly by ignoring them. The separation of scientific research from its philosophic underpinnings was a precondition for the growth of science and the creation of modern man. Like many fundamental changes, the impact and even the occurrence of this development went unnoticed until after it had run its course, and so it is only now that the extent of the break with the past has been acknowledged.

The scientific spirit thus owes its success to the acceptance of severe limitations, and consequently to specialization. But specialization becomes detrimental to the progress of science itself when scientific development has reached a point where boundaries have to be crossed and where the problems connected with these boundaries have to be faced. We may, however, attempt to confront boundary problems with the equipment with which science has provided us and in doing so gain in the understanding of the nature and importance of these ancient philosophic problems. One of these problems is the perennial question of mind and body. The integration of different fields of knowledge needed for further understanding of health and disease is hindered by some of the unresolved issues surrounding this question. A comprehensive approach would treat social and psychological influences as equivalent to physical, chemical, and physiological effects. However, if we dig deep we find that people do make a distinction between mind and body and exalt one over the other. The quite general popular view that there is something slightly disreputable or unreal about psychologically caused disease is echoed by physicians who feel most comfortable when they can satisfy themselves that there is a physical vector or a definite lesion, and by medical researchers who regard looking for the physical cause for any behavioral effect as the prime rationale behind their work.

A few years ago we were interested in an epidemic of mysterious insect bites in a textile factory. Within three days the plant was closed down for disinfection, and public health experts studied the situation. No insect or toxic agent was found which accounted for the symptoms. We studied it as a possible emotional contagion. Company officials implied there were a few women really sick but others were potential troublemakers, and that the outbreak was an instance of mass hysteria. Physicians and entomologists discovered regular relationships between behavior during the epidemic and personality, social connections, and exposure to stress. There were two kinds of disease—physical and psychological—but all saw them in different perspectives.

The Heritage of Dualism

The deep division between mind and body, foreshadowed in religious tradition, has become a tenet of philosophy through Descartes. His positing of a strict dichotomy between mind and body may have been designed originally to free the study of physical phenomena from religious constraints. Whether this interpretation of Descartes' aim is correct or not, the effect of his distinction has certainly been exactly that. The impressive rise of the sciences, physical

as well as biological, in the last 4 centuries, bears witness to this fact. On the other hand, the study of the soul or mind was left to religion, philosophy, or the humanities.

In the practice of medicine, a sharp division between mind and body had been used earlier to reclaim autonomy for the biologically oriented physician. Medieval theological thought struggled with the problem of how demons and devils could have power over the God-created world, in cases of witchcraft and sorcery. The solution which emerged in the 15th and 16th centuries was the proposition that demons, being nonmaterial, could only influence the soul, but not create any physical symptoms, or in modern terms, be responsible only for functional illness. Thus, medicine as a profession was freed from the control of theology; this development was reinforced by Cartesian dualism. This division led to great strides in the study of medicine. The idea of an absolute division between mind and body persisted. Even the development of scientific psychology, psychiatry, and psychoanalysis has done little to change this commonsense notion. This intuitive feeling, even on the part of scientists, leads to an implied trust in the future discovery of physiological substrata of any mental event, while the same scientists look with suspicion at any apparently direct effects of psychological and social variables.

The conventional medical view of illness identifies a specific injury to the organism caused by a physical injury or an active vector. A contrasting model is provided by the deviance model of the social scientist. In the extreme it puts the burden of the problem on society by arguing that illness and disease are purely socially defined and treated by society in a manner analogous to the other deviations from the social norm. One of the immediate expressions of this dualism is the fabric of the language itself. Concepts are cast in terms like nervous system and stimulus-response pattern on the one hand, and mind, emotion, and feeling on the other.

A Model and Some Postulates

The difficulty in transcending this linguistic dualism becomes apparent if a comprehensive model is described. Let us first identify four stages of dysfunction which can describe the cause of illness in a psychosomatic neutral language. These four stages are insult, expression, negotiation, and reintegration. If we consider the organism as an ongoing system, then any disturbance, either inside or outside the system, can be called an insult to the system. The second phase in the process is the reaction of the organism to this disturbance. In some way its performance is modified and its reaction will be manifest in a change relative to the environment. The next stage then involves typically the reaction of the other organisms. Their interrelation is disturbed too.

Up to this point the situation has been one of change. This change will not last forever; the organism, like any system, will tend toward a new equilibrium. A typical outcome may be a reestablishment of the situation before the injury, a process which we frequently speak of as therapy; alternatively, it may be an adaptation to the injury and establishment of a new relationship with the environment, in which case we speak of rehabilitation; and finally, it may be disintegration (death) of the system.

The forced quality of some of the terms used above illustrates the difficulty of keeping a neutral point of view with any consistency. It is difficult to transcend language patterns

One way of doing so would be to state some principles in a scientific framework, with an organic frame of reference which, at the same time, incorporates humanistic, mentalistic ideas. The first point is that we can, even will, take a biological point of view, considering man an animal species fitting into the evolutionary scheme, but that we must recognize that the special characteristics of the human species are as important as its commonalities with other species. Some of the unique characteristics of the human species are its use of language, its ability to reflect on itself and its place in the world, and its loyalty to symbols and symbolic rewards, to name only a few.

Related to this point is the fact that the integration of a system like the human being is not defined simply by the idea of biological movement as is the case in other species. The idea of quality of life as defined by the organism, for instance, may be as important to him as the existence of life itself. A person who does not follow the best medical advice may not be unreasonable, but may be choosing among a set of values among which satisfaction of organic drives is only one.

Another point is that the single organism is an abstraction in itself. Even on a purely somatic level we know that any mammal is really a system together with its parasites, and that a mammal raised in a completely germ-free environment is different from the usual animal of its species. In a quite similar way the individual human is an abstraction which does not really exist. What we really see are human beings in interaction with each other.

Finally, we must accept the fact that there is a dysfunction in the organism; that is, that there is an objective definition of an insult to the system which is not purely socially determined. What is good or bad for the organism can be objectively stated, although the way in which it is expressed may vary by cultural and social definition. It may be called disease, sin, deviation, possession, or something else, but underlying these terms is the objective fact of dysfunction of the system. In short, we have to recognize the reality of good and evil.

Personality and Mind-Body Divisions

Resistance against a comprehensive psychosomatic point of view is not only a social phenomenon. It can be seen as being intimately connected with some personality characteristics which may be indicative of a deep-seated personal philosophy. In the world-view which our culture has created, a psychosomatic point of view is at the midpoint of some dimensions of thought. We can identify two of these which seem to be basic.

One dimension is simplicity-complexity. It is extremely satisfying for many people to reduce everything to a final cause, to show that a certain problem is nothing but . . . , be it an excess of hormones or a special definition. At the other end of the spectrum, it is easy to point to the wealth of possible conditions which could influence a particular dysfunction and in this way make a reasonable analysis impossible. A comprehensive point of view starts in between these positions, relating to each problem a limited, hopefully relevant set of variables, and remaining impartial with regard to the nature of the variables, whether somatic or sociopsychological.

A second dimension is absolutism-relativism. On the one hand, one is tempted to classify the types of insults

to the system, to give them concrete existence, and to see them as absolutely determined. On the other hand one can be struck by the differences in acceptance of dysfunction in different situations and make all dysfunctions a function of cultural definition, thus espousing a complete cultural relativism. The position advocated here accepts the reality of people's distress but recognizes that the expression of the definition of this distress is partially a function of interpersonal and social conditions.

It is apparent that these two kinds of pitfalls in the path to a comprehensive approach, simplicity-complexity and absolutism-relativism, can be psychologically related and be shown to be in part a function of the personality disposition of the observer.

A New Direction for Research

Thus the application of the comprehensive point of view may throw light on the problems of this point of view itself. Some recent work on drug use may exemplify the direction which this application may take. Effects sought from drugs typically involve release from distress, but they frequently include the attainment of some altered state of consciousness, a "short-cut to happiness." Therefore, in studying the personality of people who use drugs, we might ask what the conditions are under which people seek these goals, and in addition why they seek these goals through physical means. One's personal philosophy of life has been found to exert a strong effect on disposition to use drugs as opposed, for instance, to finding personal release through religion, groups, or esthetic experiences. The whole line of research indicates that individuals tend toward either a somatic or mental end of a continuum of personal orientation.

We find a distinct analogy between the direction in which this line of research leads and that in which we are led by a consideration of the problems of a comprehensive point of view. Personality and personal philosophy may predispose people to the use of somatic or psychological means in attaining their life goals and may also guide professionals in the direction which their work takes.

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Psychological Factors in International Persuasion

Yasumasa Tanaka

Reality consists of numerous cognitive events, both physical and human. Of these cognitive events, we have images. And these images in turn tend to be susceptible to distortion by a number of causes, such as misconception, prejudice, inaccurate or inadequate information, or sound (when information is transmitted through the channels of communication).

During the past few decades, there has been a growing number of both theoretical and empirical investigations of the dynamics of human communication behavior in the conduct of both interpersonal and international relations. Research that is relevant to such interpersonal and international communication problems has cut wide swaths through the social and behavioral sciences: attitude formation and change; the effect of context upon the interpretation of both perceptual and linguistic signs; interpersonal or international perception and group dynamics; and the interaction among beliefs, decisions, and social behavior.

These investigations are increasingly cross-national or cross-cultural, which makes possible a preliminary analysis of crucial similarities and dissimilarities in both interpersonal and international perceptions and judgments.

What Is Communication?

Models which can explain human behavior have recently been constructed by a number of behaviorists. Among these is a variety of "cybernetic models" that variably take into account the communication and control aspects of human behavior. These models presuppose a series of psychological processes in which one individual's or organization's behavior, in the form of explicit "output" information produced by him or it, is dependent upon the "input" information that an individual or organization may receive from other people or organizations and from the environment.

We can assume the existence of various processes of decoding and encoding between input and output events. Decoding here refers to the way in which the individual human (or organization) receives input information from his environment. Encoding designates those processes whereby the individual human (or organization) chooses some response, in the form of output, to the environment surrounding and affecting him. The "mediation process" is considered as the bridge between decoding and encoding. It "mediates" between the sensory nervous processes of decoding on the "input" side and the motor nervous processes of encoding on the "output" side. Even in comparatively simple acts, such as making a speech, an individual's communicating behavior is complex, susceptible to many factors, and it is a continuously renewing process whereby he is always adapting to his environment. The action is initiated by an "incongruity" between the state of the organism and the state that is being tested for, and the action persists until the incongruity is removed. The fundamental building block of the social system is the feedback "loop"; a communication network that produces action in response to an input of information, and includes the results of its own action in the new information by

which it modifies its subsequent behavior. By a feedback mechanism, individual humans (and organizations) can correct errors and adjust their behavior to the continuously renewing environment.

Interpersonal interaction is not necessarily limited to a face-to-face situation. The whole or part of an encoded message may be quoted in a newspaper, or broadcast by radio and television, or even relayed via a communication satellite to local stations in foreign countries, for literally universal "mass consumption." Then, as the feedback loops become more complex, the source will need some extended "scanning" devices or "monitors" to gather feedback information. He will continuously need to keep an eye on local and national newspapers, radio or television newscasts, and even on the mass media in foreign countries.

Persuasion and the Effects of Communication

Persuasion may be defined as the art of "winning men's minds by words." The basic premise here is that persuasion is an act of communication. However, it is a special kind of communication, and it is not involved in all communication situations in which behavior is influenced by a set of input stimuli. Persuasive communication implies a judgment of the situation in terms of the intentions of the communicator and the resultant thought or behavior change of the receiver. Persuasive communications can thus be judged with respect to their success in producing desired thought or behavior, or their failure to do so.

Research on persuasive communication embraces the study of persuasiveness, on the one hand, and persuadability on the other. It also involves the study of attitudes—how they are formed and how they can be changed. The focus of recent research on persuasion is on interrelationships among these variables, and the studies have been increasingly empirical or "experimental," oriented toward the theory of attitude organization and change.

Attitude Organization and Measurement

In the last 60 years the term attitude has been used in a variety of contexts in both experimental and social psychology. One of the common definitions of attitude is the notion that it is a predisposition toward action. An attitude therefore is considered as "latent structure," through which an appropriate action is mediated.

One remarkable recent development in the theory of attitude is one of *attitude components*. Many studies appear to suggest that attitude is multidimensional and consists of three major components, classified as cognitive, affective, or conative.

Recent developments in experimental social psychology, notably in the area of the measurements of social attitudes, provide some empirical evidence for the theory. It has been suggested that one of the most effective methods of obtaining pure measures of the affective/cognitive components is by means of *semantic differential* method. In this measuring system, the first factor (i.e., Evaluation) provides the best measurement of the affective components of attitudes, typically represented by bipolar scales, such as good/bad or loved/hated. The classic factors of Potency (strong/weak) and Activity (active/passive) in the same measuring system appear likely to tap either affective or cognitive dimensions of attitude objects, depending upon in-

teraction of judgmental scales with the attitude objects judged. In the conative domain, a suitable measuring instrument termed the *behavioral differential* isolates five factors of "behavioral intentions" operating in person perception. It has been found that young people in three language/culture communities use very similar, if not entirely identical, "behavioral" factors despite differences in cultural and linguistic base.

On the basis of, and by means of, these and other psychological measuring instruments, it has become possible to measure attitude components in quantitative terms. Developments in experimental design, particularly the before/after design, have also contributed to empirical research on the communication effects upon attitude change. Persuasive communication can be submitted to a systematic test so that one can measure its success or failure.

The development of these experimental designs, attitude scales, and sophisticated mathematical methods for analyzing the effects of many different causal factors and their interactions, have now reached the point where we can obtain relevant and cumulative information about the conditions under which persuasive communications are effective or ineffective.

A Strategy of Cross-Cultural Communication

There is at least one great, commonly recognized, natural obstacle to communication across language/culture boundaries: the language barrier. But a number of sociological and anthropological studies suggest that incompatible systems of values can also become critical obstacles to communication, reducing the opportunities of mutual understanding or even producing high emotional hostilities among differential cultural committees.

One of these cross-cultural studies showed that the emotional meanings of democratic/undemocratic differ somewhat between Japanese and Americans. The terms are associated with activity, i.e., active/passive for the Japanese, while they are associated with evaluation, i.e., pleasant/unpleasant for the American. To the extent that language is a major vehicle of human thought and belief, both Americans and Japanese will soon find that they differ in their beliefs: Americans will find that what they assert to be good is bad (but, in fact, inactive) in the minds of the Japanese, and that what they would like is flatly turned down by the Japanese; and they will conclude that either the Japanese are telling a lie or are brainwashed in some way. Similarly, the Japanese will reach their own conclusion that it is the Americans who are crazy and fanatic in some way. Under these conditions, communication is hardly possible.

Is there any chance for one nation to persuade the other under these circumstances? The answer depends on the purpose of persuasion. If the purpose is simply to increase tensions that already exist between the Japanese and the Americans, any gesture, facial expression, or word that is derogatory to the other would be enough to produce the desired effect. On the other hand, to reduce the already increased tension is definitely more difficult if not entirely impossible.

Turning now to a general strategy or better cross-cultural communication, and therefore of better cross-cultural persuasion, I propose a three-step model. This model takes into account various behavior principles and it is constructed for a practical

purpose. In this sense, the strategy based on the model must also be practical as well as feasible.

First step: *Make a comprehensive analysis of specific attitude components unique to a population in the target culture.* This is to examine cultural meanings of various signs which are learned in, and unique to, a given culture. Such analysis can be carried out either by relatively naive, impressionistic observations or by use of more stringent methods such as attitude scales and statistical techniques.

Second step: *Make systematic use of a multichannel, multistep flow of communication.* Most international communications are indirect, in that the message is not transmitted directly between the source and the receiver. The message may be initiated in the President's office but it almost never reaches the individual directly. The message may be released to the press, which transmits the whole or part of the original message to the final receiver. Considering what psychologists call the "source/message" or "source/channel" interactions (that is, if a good message is associated with a bad source or channel, the goodness of the message tends to be reduced by interactions between the two cognitive events), it would be wise for the source to carefully prepare for the release of the message. In some cases, and under certain conditions, to make the source or channels psychologically less resistant to the persuasive communication, when the intention to persuade becomes too obvious to the receiver, psychological "neutrals" would have to be carefully selected and used as the source or channels.

Third step: *Make persuasion more by deeds than by words.* Although language is a major universal carrier of human thought and creativity, it has its own limitations. For one thing, words tend to be isolated from reality. For instance, a promise by words must be accomplished by deeds. If a deed does not accompany words, words remain as words and may gradually deteriorate interpersonal or international relations by causing mutual anxiety and distrust.

If nation *X* tries to plead peace and reduce tensions with "bogey" nation *Y*, merely announcing the intention is often not enough. It must be shown by some deeds—each a small step, taken one at a time, but going continuously toward the intended goal. Officially announcing that *X* does not possess any harmful or hostile intention against *Y* is only the beginning.

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Reprints from Yasumasa Tanaka, Ph.D., Professor of Social Psychology and Communications, Department of Political Science, Gakushuin University, Mejiro, Toshimaku, Tokyo, Japan

Cerebral Atrophy in Young Cannabis Smokers

A.M.G. Campbell, M. Evans, J.L.G. Thomson, and M.J. Williams

Personality changes and mental illness have been reported in chronic cannabis smokers of previously normal personality. This study was prompted by the finding of cerebral atrophy on air encephalography in four young patients who complained of headache, memory loss, or behavior change. A common factor in all four histories was prolonged heavy cannabis smoking. Amphetamines and LSD had also been taken, but in much smaller amounts. Since no recognized cause of the cerebral atrophy was apparent, neurological and radiological investigation of other cannabis smokers seemed indicated.

The first four cases were unselected routine admissions for investigation of neurological symptoms. The next five were under treatment for drug abuse, and were referred for detailed investigations of cerebral function, including air encephalography. They were selected because of known longstanding cannabis smoking; two had been attending a drug-addiction center for some time and the other three were the next psychiatric outpatient cases with histories of longstanding cannabis smoking. The tenth patient was admitted as an emergency with a drug overdose and had a 6-year history of drug abuse with heavy cannabis intake. All these cases were given a full clinical examination and were investigated by air encephalography.

One of the main difficulties in estimating the size of the cerebral ventricles by air encephalography is the choice of controls. The mean age of our patients was 22 years. To obtain normal values for the age range 15–25 years we reviewed the X-ray films and notes of all cases investigated by air encephalography in our neuroradiological unit in which the findings had been reported at the time as normal. We excluded all those with abnormal neurological signs, a raised cerebrospinal-fluid (CSF) protein, or other abnormal features. In this way we obtained 13 controls; their case-notes indicated that these had originally been referred because of symptoms such as headache, loss of consciousness, or syncope. Follow-up on these cases over 2 years had shown no disease of the central nervous system.

Significant cerebral atrophy is rare in young people. It may happen after head injury but can be attributed to this only when there has been post-traumatic amnesia of several hours or evidence of focal neurological damage at the time of the injury. None of our patients who had had minor head injuries would satisfy these criteria. Other causes for cerebral atrophy include head injury at birth, especially in prolonged labor or in conditions causing anoxia; and some cases may also be due to hypoplasia rather than atrophy, and differentiation may not be possible. Severe infections in childhood when encephalitis has supervened, congenital syphilis, and toxoplasmosis may cause atrophy, as may congenital or acquired vascular lesions. Other causes include hereditary disease such as Huntington's chorea. Diffuse demyelinating conditions can produce quite rapid cerebral atrophy in the second and third decade. Cerebral atrophy indicates irreversible brain damage. We found no such causes for cerebral atrophy in this series of 10 drug addicts.

Researchers have emphasized that generalized abnormal ventricular size

is usually found in diffuse neurological disease rather than focal neurological conditions. Only in the cases of frank neurological disease did the lateral ventricular area measurements approach those of our drug-abuse series for this age group. The finding of this ventricular size in our drug-dependent group at this age is abnormal, and although these figures might be found in the seventh or eighth decade they are abnormal for this age group.

The films demonstrate a definite pattern of cerebral atrophy. Although no specific conclusions can be drawn from the observed changes, the appearances do suggest that the worst damage is in the region of the caudate nuclei, basal ganglia, and the structures adjacent to the third ventricle. In young people these findings are of great significance.

The pattern of drug-taking was similar, in that most of our patients started on amphetamines and within a short time were smoking cannabis regularly. LSD had also been taken, but cannabis became the predominant drug in all cases. Neither morphine, heroin, nor cocaine had been taken in any significant quantities. Some patients had temporarily ceased to take drugs while in detention or in the Army, and it was therefore impossible to relate the length of history to total dose or to the extent of cerebral atrophy.

It may be suggested that our cases were abnormal before they began smoking cannabis, but in at least three cases where we know the history intimately, these individuals were entirely normal before they started drug-taking. It would be surprising to find cerebral atrophy of no apparent cause in consecutive cases, selected only by their histories of chronic cannabis dependence.

Our findings indicate that there is a pattern of cerebral atrophy in a series of young men who smoked cannabis. Although amphetamines and LSD may have an added effect, they are rapidly metabolized and excreted and would not seem likely to have the cumulative effect on nervous tissue of the fat-soluble components of cannabis. We feel that our results suggest that regular use of cannabis produces cerebral atrophy in young adults.

Far too much attention has been paid to psychological and behavioral disturbances, without relating these to the possibility of permanent damage to the brain. This work on man indicates an urgent need for further studies of the neurological consequences of drug abuse, and particularly the long-term effects of cannabis smoking. Further radiological and neuropathological studies on man and other primates are suggested. Serial psychometric and encephalographic studies in the young drugtaking population would seem worthwhile.

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Childhood Poisoning: An Unfortunate Consequence of Methadone Availability

Regine Aronow, Shashi D. Paul, and Paul V. Woolley

The use of methadone hydrochloride blockade therapy for heroin addiction has been widely accepted; however, the danger inherent in methadone for small children has received scant attention. Eighteen cases of accidental ingestion by children less than 7 years of age occurred during the 9 months following the opening of the first public methadone substitution clinic in Detroit. The problem is complicated by the easy availability of methadone outside the public clinics. More than one-half of these episodes involved methadone obtained by prescription for parents or relatives living in the child's home, and the remainder involved street sources; apparently, no episode involved a public clinic.

A synthetic analgesic, methadone hydrochloride is a heptanone derivative with pharmacologic actions similar to those of morphine yet effective in blocking addiction to morphine, meperidine, and heroin. It is a slow-acting, cumulative drug effective 20 to 30 minutes after administration of an oral dose, with analgesia for 4 to 6 hours and physiological effect for 24 hours or longer. Methadone distributes throughout the body; a small amount reaches the brain in 1 to 2 hours after parenteral administration. A fall in blood pressure may be seen from both peripheral and central actions. Miosis is an important manifestation, although with progressive hypoxic brain damage, the pupils may become evenly or unevenly dilated.

The most serious toxic effect of methadone is respiratory depression, which may last up to 48 hours. It causes decreased minute volume, contracted bronchial smooth muscle, and depressed cough. With larger doses, the rate of respiration decreases with diminished alveolar ventilation and retention of carbon dioxide. Respiration may continue because of hypoxic reflex drive initiated from carotid and aortic chemoreceptors. As the alveolar $_{p}CO_2$ rises, the arterial $_{p}CO_2$ increases, which causes increased cerebral blood flow with elevation of cerebrospinal fluid pressure. Hyperventilation can reverse this process.

The specific for the respiratory depression caused by methadone is a synthetic N-allyl derivative of morphine, nalorphine. With the reversal of respiratory depression by nalorphine there is an arousal effect, relief of miosis, and a variable improvement of the circulatory depression. These effects may be observed as soon as 30 seconds after intravenous administration of nalorphine; the duration of action lasts 10 minutes to 2 hours. The recommended dose for children is 0.1 mg./kg. administered intravenously. With no response, one half to one third of the dose may be repeated two or three times at 10-minute intervals. If there still is no response, respirations should be continued artificially and nalorphine should be tried again in 2 to 6 hours. In patients with severe intoxication, respiratory depression may recur rapidly, and fractional doses of nalorphine may be necessary for prolonged periods.

The most important approach to methadone toxic reactions in a child is to maintain adequate respiratory ventilation by establishing an airway, by using precise supportive care such as establishing fluid and electrolyte

balance, by giving nalorphine as suggested, and by emptying the upper and lower gastrointestinal tracts to prevent aspiration of gastric contents, to allow unencumbered excursions of the chest, and to remove any unabsorbed drug. The physician should anticipate recurring respiratory depression, including apnea, for up to 48 hours, depending upon dosage. Analeptics should not be used; if the patient is comatose, intracheal intubation should be carefully done prior to gastric lavage.

Although the minimal lethal dose in adults is said to be 75 mg., and although it has been stated that 80 mg. can be fatal to a child, our study shows that 10 or 20 mg. might prove fatal. The minimal dose known to produce symptoms is not known.

Since the histories were elicited with great ease, the amounts specified are probably quite accurate. In two cases, the parent had just set the 10-mg. tablet on the table while getting water when the toddler grabbed and swallowed it. The delay in seeking help in the majority of the cases appeared to be related to the parents' total unawareness of the danger inherent in methadone for their small child until drowsiness and decreased respiration became apparent.

A patient who died had been seen at two other institutions before being referred to Children's Hospital of Michigan. Inadequate amounts of nalorphine had been given, undesirable analeptics had been administered, and the stomach had not been emptied. Apparently, at some stage aspiration occured and the child developed severe hypoxia. An autopsy later showed an old subdural hemorrhage, which complicates the evaluation. Another case suggests that concomitant medical problems might exaggerate the effects of methadone in children.

The varying clinical course that may ensue in a child with enough respiratory depression to necessitate the administration of nalorphine dictates the need for close and prolonged observation in the hospital.

Addendum

Since this article was written, 23 more cases of methadone ingestion by children have been treated at this institution without any fatalities. There is evidence of greater availability of higher dosage forms of methadone, especially through sources on the street, which underscores the seriousness of the problem.

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Hyperkinesis: Delineation of Two Patterns

Samuel J. Marwit and A. Jack Stenner

The hyperkinetic child presents a perplexing challenge for pediatricians, child psychiatrists and psychologists, neurologists, educators, and parents.

A review of the literature indicates consensus among professionals regarding certain behaviors associated with hyperkinesis. Among the list for which there appears to be substantial agreement are: overactivity, impulsivity, low frustration tolerance, short attention span, distractibility, and a high degree of aggression. In addition to these behavioral correlates, boys tend to manifest the syndrome more than girls, firstborn children more than latterborn, and children aged 6 to 10 more than those who are younger or older.

Other characteristics associated with hyperkinesis are difficulties in motor functioning and include such traits as awkwardness in locomotion, poor motor coordination, motor speech difficulties, dyslexia, dyscalchia, dysgraphia, and perceptual motor problems. These symptoms are not unlike those manifested by nonhyperkinetic brain-injured children, and authors who advocate the inclusion of these characteristics in the hyperkinetic syndrome are those who ascribe a primarily organic etiology to the disorder. While such symptoms have been shown to be present in a number of cases, they have been conspicuously absent in others; therefore, it is questionable whether they are truly pathognomonic to hyperkinesis.

We believe that there are two relatively independent forms of the general disorder "hyperkinesis." The distinction between the two is between "hyperactive" and "hyperreactive" patterns, referred to here as Pattern I and Pattern II hyperkinesis, respectively. Each pattern is associated with specific behaviors, etiological factors, and consequently, treatment procedures. Hopefully, this distinction which now claims its validation from clinical observation and experience, will be empirically validated and will serve as a conceptual framework for future investigation.

Pattern I—The child displaying the hyperactive pattern (Pattern I) appears: to be constantly stimulated; to have no capacity for sustained effort; to have unstable peer relationships; and to be characterized by what looks like a lack of "commonsense." Furthermore, he displays awkwardness and clumsiness, perceptual motor problems, and specific learning disabilities.

The etiological factors which appear most consistently with Pattern I children are: organic brain damage (observable hyperkinesis from birth, repeated neurological and psychological signs suggestive of organicity, and aimless perseverative tendencies); maturational lag (no significant evidence of brain damage, slowness in progressing through developmental stages, generally immature behavior, and hyperkinesis observable from early infancy); and constitutional (occurrence of Pattern I behavior in the absence of brain damage, maturational lag, emotional disturbance, or anxiety).

Pattern II—The child displaying the hyperreactive pattern (Pattern II) appears to be periodically and selectively stimulated; to be able to control himself when he deems it beneficial; to be capable, if motivated, of sustained effort comparable to that

of a normal child; and to show leadership potential.

The etiological factors which appear most often with Pattern II children are: emotional disturbance (relatively sudden onset of hyperkinetic tendencies in later childhood; seldom any evidence of maturational lag or organicity); and anxiety (occurrence of hyperkinetic behavior in the presence of an anxiety-provoking situation and the subsequent disappearance of this behavior following the removal of the precipitating stimulus).

There are three possible treatment orientations which can be employed in modifying the hyperkinetic child's behavior: pharmacological manipulation, environmental modification, and a combination of both. Logically, the treatment orientation chosen will depend on the diagnosed behavior pattern and its corresponding etiological factor. It is, therefore, dispositionally, as well as, diagnostically important to make the distinction between Pattern I and Pattern II hyperkinesis.

Pattern I—The main treatment objective is the modulation of the child's energy level and the subsequent directing of excess energy into socially appropriate behaviors. What can be done through pharmacological means is to reduce his energy output to a manageable level and then to try to teach the child when and where the expression of his energy will be tolerated. Reduction of hyperkinetic activity can only be accomplished pharmacologically; it is only following this that new learning can take place.

Pattern II—In contrast, Pattern II hyperkinesis is predominantly a learned response acquired by the child to help him cope with his environment. Through the appropriate use of behavioral and environmental modification techniques, the Pattern II child's hyperreactivity can be reduced and eventually eliminated. Drugs, if used at all, are ancillary.

The practical advantages of maintaining this two-pattern delineation are threefold: It increases our understanding of the disorder and clarifies ambiguities in the literature. It allows the practitioner increased precision in diagnosis and choice of appropriate treatment procedures. It provides the researcher with a new conceptual framework from which to conduct future investigations. At present, the distinction between Patterns I and II is theoretical and needs empirical validation.

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Should Psychiatry and Neurology Integrate?

W.P. Wilson, C.E. Wells, and P.J. Irigaray

In the evolution of any scientific discipline, frequent shifts in emphasis occur as the body of knowledge increases. Psychiatry has witnessed a number of these shifts since 1900. Before 1900, the psychiatrist was responsible for the care of patients with diseases of the nervous system, irrespective of their etiology; as a result, he was called a neuropsychiatrist. Neurological training was a must since the diagnosis of a large part of his practice depended on his neurological abilities.

After 1920, further development in sociology, psychology, and anthropology as disciplines led to their incorporation into the body of knowledge that belonged to psychiatry. Psychoanalysis contributed to this development. Unfortunately, neurology and neurological surgery did not find much of use in the newly developing areas of psychiatry. As a result, there began a slow trend for these other brain scientists to be less interested in psychiatric disease.

By 1939, a number of epochal developments led to a further rift in neuropsychiatry. The development of antibiotics furnished the neurologist with therapies for a variety of diseases heretofore untreatable. In spite of the development of lobotomy, electric shock therapy, and electroencephalography, psychiatry still pursued the development of psychotherapy. The introduction of new medications suddenly put "medicine" back into the practice of psychiatry. Patients known to be refractory to persuasion now were treatable and could be helped with lesser expenditures of time and money. Changes in psychiatric philosophy, however, did not follow as rapidly and at least a decade elapsed before a major shift in therapeutic emphasis took place.

The changes that have taken place have forced psychiatry and neurology to reevaluate their directions. Psychiatric training programs have again emphasized the basic sciences of neuroanatomy, neurochemistry, neurophysiology, neuropharmacology, and neuropathology. There has been a reawakening of interest in behavior in neurology. In order to minimize competitive destructiveness and maximize the beneficial effects of competition, we shall endeavor to present a point of view that is based on the premise that there must again be a discipline of neuropsychiatry and that training programs have to be better integrated in order to produce at least four types of clinicians interested in diseases of the nervous system.

Psychiatry

It has been said that psychiatry differs from the rest of medicine in that it has one foot in philosophy and the other in neurology. Perhaps psychiatry uses philosophy and recognizes that disease of the mind will influence the philosophical interpretations and ideas of the patient more frequently than do diseases of the body. We might add that disease of the brain, whether "functional" or "organic," will profoundly influence behavior. Thus psychiatry becomes the science of behavior, and whatever influences behavior relates to the practice of psychiatry.

Our fundamental premise is that the functions of the mind if altered can result in behavioral changes. In psychiatry, one recognizes that these

functions may be altered by a variety of diseases, many of which result in severe psychiatric incapacitation. Some are associated with structural diseases of the nervous system and thus, because of associated "hard" neurological signs, may also be in the province of the neurologist. Their care, if behavior is altered, eventually comes under the management of the psychiatrist, who all too often has little competence in the field of neurology.

A person comes into psychiatry for varied reasons. In the past, he was rarely motivated by the strength of figures in the field, for in most medical schools the aggressiveness of the surgeons and internists, and their grasp of facts that related to the hard knowledge drilled into the students' heads during the first 2 years, gave them a distinct advantage over psychiatry or neurology in competing for the students' interests and subsequently for their loyalties. Psychiatry, with no apparent relationship to the body of preclinical knowledge presented to the student, seemed irrelevant.

Experiences with assaultive or combative patients or patients who expressed conflicts similar to those of the students' everyday life also on occasion frightened him away from psychiatry or reinforced negative attitudes already in existence. Finally, the negative attitudes of society and the rest of medicine tended to provide a barrier that precluded the development of a great interest in the subject. Thus, a person who came into psychiatry did so with motivation that differed from that of those entering other specialties.

World War II changed all of this; men who had never before been exposed to psychiatry found the field interesting and rewarding. Today more and more young physicians look toward psychiatry as a field in which the synthesis of biological and dynamic knowledge will result in a science of human behavior—a new psychiatry—wedded only to truth rather than to ideologies, even though they still may have interests in social science, basic biological science, and psychoanalysis.

Neurology

The necessity for the physician to understand the psychological elements of illness is generally acknowledged and few would dispute it. For the neurologist, dealing as he does with disease processes that involve the nervous system per se, such understanding would appear doubly important. Yet when we survey the field informally, we are struck by the lack of structured training in psychological methods and psychiatric medicine afforded to trainees in neurology and sometimes by the rather open antipathy to such training expressed by the neurologist-teacher and by the neurologist-in-training.

In most medical schools, the basic neurological sciences are taught not only as basic but as precise sciences. In neuroanatomy, for example, the honey-comb-like predictability of neural structures is emphasized, along with the precise relationship between neural lesion and resultant clinical dysfunction. Even when clinical aspects of neural dysfunction are emphasized in such a course, the patients are chosen to illustrate the predictable relationship between lesion and clinical deficit. Understandably, we seldom choose for presentation to the novice the patient whose dysfunction puzzles even the experienced clinician and the assured anatomist. Thus, as in the elementary presentation of any corpus of knowledge, the relative certainties are emphasized; the uncertainties, controversies, and

regions of the frankly unknown are veiled by omission. Further, during his years of clinical instruction, it is easy for the medical student to be lulled into a false concept of the scientific purity of the neurological specialty.

It is quite possible not only for such views to be brought by the student into a neurological training program, but for the resident to emerge from such a program several years later with these concepts unchallenged. The authority figures in the training program may emphasize only the "physical;" their neglect of the human aspects unwittingly attests to their lack of importance. Others, by their hostility toward or discomfort with the psychiatric aspects of disease, may suggest that this area is one that is better ignored.

Psychiatrists may also contribute to these attitudes by their remoteness from the general hospital activities, by their lack of interest in caring for patients with chronic physical ills, by their uncertainty in dealing with patients with proven organic disease of the central nervous system, and occasionally by the too pointed observation that the patient's physical problems are largely irrelevant to his dysfunction, and that major attention should rather be accorded his psychiatric disease.

Psychological Factors in Neurological Disease

We doubt that many physicians in the private practice of neurology deny either the importance of psychological factors in their patients' illnesses or the importance of psychological techniques in their treatment. Even a casual perusal of patients' records on the private neurology service of a large hospital will attest the striking importance of "functional" (which can usually be translated as "psychiatric") illness in such a population. We likewise doubt that an academic neurologist, presented with seriatim rather than selected admissions to a large and busy public neurology service, would be unimpressed by the significance of psychological factors in disease.

Psychologic factors are important and notable in a large proportion of unselected neurologic patients. One sees not only what one wishes to see, but also what one is trained to see. It is thus essential that the trainee in neurology be inspired to want to ferret out psychiatric dysfunction in his patients and that he be taught to delineate and deal with these problems of dysfunction in the nervous system.

Lamentably, neither psychiatry nor neurology has acknowledged the profound changes that have occurred in the demands made on both professions for the care of disturbed behavior. Each has attempted to "go it alone" rather than to combine their efforts. Certainly this wasteful schism should not continue since manpower resources are limited in both fields.

To remedy this situation, we propose to alter current training programs to improve the quality of training now afforded the neurologist as well as the psychiatrist. The alterations proposed take into consideration the various personality factors motivating the decision to become a neurologist or a psychiatrist but do not neglect the fundamental usefulness of a core of knowledge that bridges the philosophical approaches chosen by the trainees.

Designing Core Courses

The current evolution of medical education has indicated the need for the identification and teaching of core knowledge. The recognition that

there exists a wealth of knowledge in any subject that may or may not be relevant to the practice of medicine in any given specialty has precipitated the revision of curricula in medical schools. It must be expected that within a few years graduates of revised medical curricula will come to a residency having already obtained a fundamental core of knowledge that places them far ahead of residents beginning with the usual background derived from more traditional medical curricula. The future development of medical curricula will demand that core knowledge be identified and teaching materials developed that will allow for the continuous addition of detail to meet the needs of individuals pursuing the several types of medical training that require the designated subject matter.

Still, this will not be enough. It is important that core courses contain fundamental knowledge on which one can build. Neuroanatomy is taught by leading the student into a morass of detail that is irrelevant to the psychiatrist. A brief review of the several features of the gross anatomy of the cord and the major motor and sensory tracts may be all that is necessary for this part of the nervous system.

The significant facts concerning the higher nervous system should of course be taught in a like manner, using a systems approach rather than a segmental one. This limited introduction is of course not adequate for the neurologist, but he can build on such a base. In clinical psychiatry, likewise, a basic course in psychiatric examination techniques and psychiatric diagnosis could provide the basic knowledge on which the neurologist builds adequate diagnostic skills. Since there should be an integration of training there should also be four tracks a student could follow: (1) psychiatry only, (2) neuropsychiatry, (3) neurology and psychiatry, and (4) neurology only. Common to these tracks would be core courses in neuroanatomy, neurophysiology, neuropharmacology, and neuropathology, with other basic courses in social sciences, psychiatric and neurological examination, and diagnosis.

Little change in current curricula would be necessary to effect the notions outlined above, for we have seen what an influence the continuous exposure outlined can have on the training of both neurologists and psychiatrists. Both neurology and psychiatry would benefit from such a change, and the basic neurological and psychiatric care of the community would be better met if such programs were implemented.

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On the Role of the Black Mental Health Professional

Leonard E. Lawrence

Traditionally, it has been rather difficult for blacks to enter training institutions of high repute. The old adage about needing to be 50 percent better than his white peer cannot be denied. After entering such training the black student is put into somewhat of a bind. He is taught theory which has primarily been developed in the study and treatment of whites. He, in effect, is asked to deny his heritage until it becomes advantageous for the institution to recognize that he is colored or Negro or black. Black trainees are expected to be instant experts on ali other blacks. But how can an individual be expert at something he is being trained not to be? Institutions of training for mental health professionals must come to realize that unless there is more than token exposure of trainees to all areas of learning—including the so-called ghetto—then their training programs for both blacks and whites are rather deficient.

The Ella Austin Community Center is located on the near east side of San Antonio, Tex. The surrounding area is predominantly black. The permanent staff consists of both professionally trained people and of volunteers who are indigenous to the surrounding community. The building is old and in poor condition. During the early stages of operation, it became apparent that many persons seen at that agency, in addition to social and economic problems, were burdened with problems of an emotional nature. Most mental health services were centered in other parts of town. Through some real hustle and a little scrounging, a liaison with the County Community Guidance Clinic was established. Community Guidance staff began to spend time at Ella Austin. Fortunately, these "outsiders" did not come in with too many preformed ideas about how to cure all the black ghetto ills. Rather, they came to learn the needs. They did not come to write volumes of research. Rather, they came as "participant observers." They were frightened. All the myths, all the fantasies about ghetto life and violent blacks were unfolded in their presence. These outside professionals, however, were prevented from making rash judgments and interpretations by the professional blacks. Thus, an almost autonomous mental health unit is now functioning within this agency. There is a black psychiatrist who spends time with the agency. There are two black social workers who, although trained in white institutions, have been away long enough to now be effective with their black clients. There are a variety of staff members with anywhere from a college education to having completed third grade. But, most important, is the idea that the staff, which is 90 percent black, is, for the most part, indigenous to the community. And those blacks who do not live within the community itself have allowed themselves the luxury of rediscovering those empathetic bonds which have their roots in what is now called ghetto. We see people—adults and children with emotional problems; we go to schools; we make home visits; we stand on the corner and shoot the bull; we go down to the welfare office; we get pills from the local pharmacy.

Training has not been referred to as yet. There are those who would say,

how can someone with a third-grade education be a therapist? If one means can this person do analytic interpretation, formal operant conditioning, or traditional psychotherapy, then, obviously, this person cannot. But, if we mean advice giving based on a successful experience (or an unsuccessful one), then we are talking the same language. The same is true if we mean helping this person with a third-grade education to know when to call one of his professionally trained coworkers, and himself getting some direction. Training for our staff is both direct and indirect. It is direct in that professionally trained individuals talk with their indigenous coworkers about certain simplified principles of human behavior, drawing upon experiences which are common to both, to illustrate points; indirect in that the indigenous coworkers are integral parts of family-interviewing procedures and learn by watching and by doing.

The permanent staff in the facility are blacks. The clients are predominantly black. The problems which they present are definitely black. What better opportunity exists for the education of the mental health worker-to-be. Certainly for the black student the whitewashing phenomenon does not exist here. Rather, the student can be given rather realistic yet appropriately supervised exposure to the black patient. That this exposure takes place within the patient's own community enhances the reality of the situation.

The exposure of white trainees to black communities, under the supervision of knowledgeable blacks will, in time, help to alleviate the neglect of black patients, and such exposure will also help the white trainees to be more effective, and possibly relevant, in caring for black patients. Obviously, the number of "trained black professionals" is relatively small. But there is a vast reservoir of knowledgeable blacks who are indigenous to any community. This is why we speak of coworkers rather than someone working for someone else. A white resident may well learn more about relating with blacks by spending ½ hour observing a black case aide in our center than by spending 20 supervisory hours discussing his one black patient with his white supervisor at the ivory tower. Once he comes where the action is, he can no longer shut out that which he either does not want to recognize, or has never had the opportunity to experience.

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mental health and the law

"Voluntary" Hospitalization of the Mentally Ill

Janet A. Gilboy and John R. Schmidt

The use of voluntary rather than involuntary procedures for the hospitalization of the mentally ill has been widely acclaimed in recent years by both medical and legal scholars. While legal scholars have bitterly attacked the civil commitment hearing with its procedural inadequacies, critical legal analyses of commitment procedures have concluded that voluntary admission effectively sidesteps the civil liberties issues involved in compulsory commitment.

Medical and legal proponents of voluntary care conceive voluntary admission as an individual decision to accept mental treatment, made entirely apart from involuntary commitment procedures, thereby avoiding the therapeutic and legal problems of coercion. We have recently studied the use of voluntary admission procedures in Illinois, a State in which a substantial majority of persons hospitalized in mental institutions are now admitted under voluntary procedures. The results of our study indicate that the foregoing statistic is misleading.

In a majority of cases voluntary admission is utilized to hospitalize persons who are already in some form of official custody. Individuals are induced to voluntarily commit themselves with the threat of involuntary commitment as the principal means of persuasion, and with little concern for the adequacy of the information on which the individual's decision is based or whether it is "voluntary" at all. This situation raises serious legal questions which have thus far gone largely undiscussed.

Under Illinois law there are two different procedures for voluntary admission to mental hospitals. Under "informal admission," an individual is admitted to a mental hospital without formal application and is free to leave at any time during normal day-shift hours. Under "voluntary admission," an individual is admitted to a mental hospital upon formal application and is free to leave within 5 days, excluding Saturdays, Sundays and holidays, after giving notice of his desire to leave. However, during that 5-day notice period, the hospital officials may ask a court to hold an involuntary commitment hearing, which must be set within 5 days after such petition. The patient continues to be hospitalized pending a final order of the court at the hearing.

Our study disclosed that in only about 1 percent of the cases admitted to mental institutions in Illinois is "informal admission" utilized. In contrast, voluntary admission is used in about 68 percent of all cases. The reason for this difference appears to be the additional restraining power the procedure gives the hospital over the patient. The value of such procedures to officials lies in hospitalizing individuals with a minimum of responsibility and difficulty.

The case which proponents of voluntary admission almost always have in mind is that of an individual who arrives at a mental institution and asks to be admitted for treatment. We call

these "non-custody cases" to denote the absence of any official custody prior to the individual's decision to commit himself. Studies on voluntary admission show virtually no awareness that voluntary admission is ever used in any but non-custody cases; our study disclosed, however, that non-custody cases account for only about one-half of all voluntary admissions. The false assumption that such cases are typical may account for the absence of criticism of the procedure.

Our study disclosed that about 40 percent of all voluntarily admitted patients are brought to the mental hospital by the police and in about 55 percent of the cases where individuals are brought to the hospital by the police, voluntary admission results.

In Illinois, the police may bring a person to a mental hospital on the basis of: an "emergency petition"—a statement from some other individual that immediate hospitalization is necessary for protection; a "certificate of a physician"—a petition, signed by an examining physician and one other person, stating that a person is in need of mental treatment, on their own initiative or at the request of the individual's family or friends.

When a person is brought to the mental hospital by the police, the admissions officer has three principal alternatives: to release him, to voluntarily admit him under either of the two procedures discussed earlier, or to involuntarily admit him on the basis of the "emergency petition" or "certificate of a physician."

The mental hospital admissions offices we studied operated under severe pressures due to inadequate time and personnel—a situation which creates strong pressure to screen patients quickly and move on to the task of getting their admission paperwork out of the way. Voluntary admission of a patient simplifies the job of the admissions office. Moreover, the desire to avoid responsibility for officially affirming the patient's need for treatment was evident in a number of cases. In addition, since it is assumed that an involuntary procedure would result in commitment, voluntary admission is viewed as more desirable from the individual's standpoint. To reject a patient, the admissions office would have to reverse the judgment of the police. In the overwhelming majority of cases brought to the hospital by the police, the patient is admitted to the hospital.

In non-custody cases, the individual is making a choice between voluntarily committing himself or remaining outside the hospital, a fairly simple choice. In police custody cases the alternatives as they appear to the individual are voluntary admission versus involuntary commitment, a much more difficult decision. The typical practice is to cursorily explain voluntary admission to the patient, describing it as a desirable alternative to involuntary commitment. To regard the resultant uninformed decision to accept hospitalization as "voluntary" is highly artificial. A strong argument can be made that fuller disclosure is legally required under the common law of fraud and under the U.S. Constitution.

Voluntary admission to a mental hospital is a form of contract between the individual and the mental hospital. The individual gives up certain rights—including freedom of movement—in exchange for mental treatment. Fraud in connection with such a contract—that is, the misrepresentation of facts by hospital officials—should be regarded as illegal and as negating individual consent to hospitalization. In many situations, the common law of fraud imposes an

affirmative duty on one party to a transaction to disclose all facts material to the other party's decision. Such an affirmative duty to disclose is generally held to exist whenever the parties stand in a "confidential relationship" with one another, a classification which includes the relationship of physician and patient. Also an affirmative obligation to disclose all material facts exists when one party has clearly superior means of knowing the facts, or when the other party is under some form of disability of which it would be unfair to take advantage. Under these doctrines of common law fraud, it seems reasonable to conclude that hospital officials not only must not misrepresent facts, but are under an affirmative duty to disclose all material facts to an incoming patient faced with deciding whether to consent to voluntary admission.

From a constitutional point of view, the significant factor is that when an individual faced with involuntary commitment decides to voluntarily commit himself, he is waiving certain constitutional rights. Essentially the individual in police custody cases waives his right to a hearing—together with ancillary rights—when he signs himself in voluntarily.

The Supreme Court has stated in many cases that there is a presumption against waiver of constitutional rights and that any such waiver, to be valid, must be made "intelligently and understandingly." Thus, before a court accepts a guilty plea from an individual threatened with imprisonment in a criminal case it must exercise "the utmost solicitude to make sure he has a full understanding of what the plea connotes and of its consequences." The standard form for a plea of guilty in Federal courts requires a defendant to state that he has read the indictment against him, discussed it with his attorney and believes that he understands it. He must have discussed with his attorney the consequences of pleading guilty and the alternative of defending the case and must know that if he pleads "not guilty" he will be entitled to a speedy trial, to see and hear all witnesses, and to be represented by counsel.

An individual who decides to offer himself for voluntary admission in lieu of involuntary commitment proceedings makes a similar choice but enjoys no comparable solicitude for his rights on the part of hospital admissions officers. The choice is a serious one and it entails a waiver of basic constitutional rights. The practices we observed show no recognition of this fact.

Courts have been concerned that any waiver of constitutional rights be completely voluntary, uncoerced, and based on full information. The requirement of "voluntariness" offers no easy standard for application. Admissions officers we observed did not pressure individuals to voluntarily admit themselves with relentless, intense coercion. Rather, the effort was to get the individual to sign himself in so that responsibility could be avoided, the screening process and paperwork could be simplified, and the admissions officer could move on to the next case.

Our study disclosed that approximately 10–11 percent of voluntary admissions to mental hospitals result from decisions made, or announced, in court at the time of an involuntary commitment hearing. Voluntary admission occurs in approximately 35 percent of the cases which come to court for involuntary commitment hearings. The court hearing may be the result of initial involuntary commitment; however, in about 60 per-

cent of cases the court hearing follows an initial criminal arrest.

In Chicago, individuals who are arrested for misdemeanors are taken before a judge for a preliminary hearing at which bail is set. If an individual cannot make bail he is held in custody pending trial, and the judge may refer him to the Psychiatric Institute at the jail for a psychiatric examination. If the Psychiatric Institute finds that the individual is "in need of mental treatment" he is transferred to the State mental hospital. In 1970 in Chicago the courts referred over 6100 misdemeanor cases to the Psychiatric Institute and in about one-third of these cases the defendant was transferred to the mental hospital.

Those persons sent by the Psychiatric Institute to the mental hospital are examined by a criminal ward psychiatrist who has the option of returning to the jail any alleged mentally ill person he does not consider to be in need of hospitalization; this rarely occurs. The defendant is generally at the mental hospital for about 7 days prior to a civil commitment hearing. During this period a social worker develops a portfolio to provide the judge at the court hearing with information as to the individual's past behavior. The social worker may recommend to the ward psychiatrist that persons who do not need to be hospitalized be sent back to jail; this, too, is rarely done.

The judge in a civil commitment hearing decides the disposition of a case from among a number of alternatives: release, return to jail to await trial, assignment to custody of a relative or friend, or continuation and another court hearing. A judge may also hospitalize persons involuntarily or allow them to sign in voluntarily.

We observed 110 court hearings at the State mental institution. Usually present at these hearings were the judge, the State's attorney, the public defender and/or private attorney representing the patient, a psychiatrist, and a social worker. In the cases observed, five persons were released to the care and custody of individuals, six were released outright, eight were returned to jail, five cases were continued, 56 persons were involuntarily hospitalized, and 28 were voluntarily hospitalized. In 18 of the 28 court cases where a person entered the hospital voluntarily, the hearing began with the psychiatrist indicating that the patient would accept voluntary admission, and the hearing ended almost immediately. Most of these hearings took no more than 1 to 2 minutes.

In an average 3-hour court day at the mental hospital, the court handled 17 cases, and the patients were generally represented by the public defender. The public defender on the morning of the court hearing usually spoke with each of the patients in the criminal ward for about 5 minutes. The public defender generally had reviewed the patient's record and had some information about his arrest, but typically he did not have time to review other reports on the patient's current behavior or psychiatric history. The public defender may suggest to the patient that he sign himself in voluntarily; little more information was usually given. There was no explanation of what "voluntary admission" means in terms of legal rights or of what the alternatives to voluntary admission might be.

The public defender generally views his role as nonadversarial. Since the judge almost invariably goes along with the public defender's recommendation of voluntary admission for a particular individual, the public defender's decision to suggest voluntary admission to a defendant is critical

However, the criteria for making that decision are unclear. It might be expected that the involvement of the public defender and the judge at the time of a court hearing would insure that any decision on admission would be fully informed. However, the judges appear to give no consideration to the defendant's awareness of his situation.

Where persons come to civil commitment hearings after having initially been arrested on criminal charges, the individuals are under an added pressure: the threat of criminal prosecution if they should successfully resist civil commitment. If the individual is committed, voluntarily or involuntarily, the criminal charge against him is usually dropped. It was clear in our study that psychiatrists and social workers retain at the mental institution persons not mentally ill in order to avoid sending them back to jail to await trial on criminal charges.

Constitutional problems arise when a judge, public defender, or State's attorney is allowed to indicate to an individual that a criminal case against him will be dropped if he voluntarily admits himself to a mental institution. These problems would be avoided, of course, if all criminal charges were dropped automatically when an individual is transferred to a mental institution for civil commitment proceedings, thus permitting mental health procedures to operate free of the pressure of pending criminal cases. The problem might also be avoided in some cases by not making the criminal arrest in the first place. There are indications that criminal arrests are frequently made where the arresting officers are aware that what is really involved is a mental health problem. Then the added pressure for voluntary admission which such a pending criminal charge imposes is particularly objectionable since the purpose of the criminal charge relates to the mental health proceedings. This course of action makes it doubtful that any voluntary admission is "voluntary" at all.

Our study indicates that widespread use of voluntary admission to mental hospitals reflects a desire to find simple commitment procedures. Obviously, that attitude cannot be accepted as a justification for present practices. The involuntary commitment process, with its various safeguards, is a constitutionally required means of protecting citizens from the dangers of arbitrary civil commitment. The safeguards of the involuntary commitment process should not be evaded by increased reliance on the device of inducing uninformed voluntary hospitalization under the threat of involuntary commitment.

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mental health news digests

Mental Health Volunteers Cited for National Awards

The National Volunteer Awards, sponsored by the National Center for Voluntary Action, were given February 10, 1972. Citationists honored for their work in the mental health field included Mrs. Ethan A. H. Sims of South Burlington, Vt., for her years of volunteer service to that city; the Chattanooga-Hamilton County Medical Society for its outstanding volunteer work in treating heroin addicts; the Athens Mental Health Center Volunteer Program, which consists of 400 Ohio University student volunteers who have brought the first community contact to mental patients in the back wards of the Athens Mental Health Center, Ohio; Annie Bostian of Salisbury, N.C., for her volunteer work at the VA Psychiatric Hospital; Della Zerger of McPherson, Kans., for her efforts with mentally handicapped people; the Suicide and Crisis Intervention Service of San Bernardino, Calif., for organizing and providing emergency aid by volunteers to potential suicides and others in crisis; and "Parents in Crisis" of Buffalo, N.Y., for its contribution to advance understanding and education for parents of drug users.

Information and Referral Center for Older People Begins Operations

The Division on Aging, Wisconsin Department of Health and Social Services, has been designated to supervise the first demonstration program operated by a State agency on aging to test a network of information and referral centers for older people. The Division will administer the State's programs under the Older Americans Act and will supervise the project, act as the research and planning agency, and provide training for project staff.

The network of centers includes 14 sites in the State. All of the centers will report data on needs directly to the State agency, and an agency-appointed task force will coordinate community resources to fill the needs. The demonstration will test whether specialized centers for the aged can give better information and referral service to older people than centers for the general population; whether nonprofessionals can provide this service as well as professionals; and whether a central administrative structure can evaluate and utilize the collected data. The Institute of Interdisciplinary Studies developed the plans for the network and will evaluate the results in consideration for a potential national network.

PALS Advocates Rights for Mental Patients

The Patient Advocacy Legal Service (PALS) has been formed as a clearinghouse for information on the subject of commitment for psychiatric hospitalization. Initially the PALS clearinghouse will create a repository for all briefs and cases dealing with mental commitment and related areas. Lawyers around the country will be able to obtain from PALS exemplary cases and other kinds of information on all facets of mental commitment. Future plans include the formation of a network of medical and legal resources available for counsel on

matters of psychiatric examination, expert testimony, and rights of mental patients.

PALS believes that mental patients have certain rights, and that there exist major abuses of those rights, especially in the realm of commitment practices. The organization is committed to help patients secure their rights to: legal representation, cross-examination of witnesses, examination of hospital records, independent psychiatric evaluation, a full hearing, periodic reevaluation of mental status, adequate treatment, availability of adequate treatment staff, and presence of themselves and their doctors at commitment hearings. Currently PALS is establishing a brief file and an article file on commitment to mental hospitals.

PALS is also committed to the elimination of stigma and discrimination against mental patients in the pursuit of jobs, licenses, and insurance. They are soliciting the aid of physicians and lawyers in their efforts, and welcome cooperation and comments from interested parties.

For more information write to Max George Margulis, Director, Patient Advocacy Legal Service, 1010 East Pontiac Street, Fort Wayne, Ind. 46803.

U.S. Office of Education to Initiate Special Office for the Gifted and Talented

In a report to Congress the U.S. Office of Education stated that gifted and talented children in the United States are suffering psychological damage and impairment of their special abilities because the nation's school systems have neglected them. This neglect, the report stated, is as great as the deprivation suffered by other populations with special needs that are served by the Office of Education. The number of gifted and talented students in the United States is estimated to be between 1.5 and 2.5 million; existing Federal, State, and local services for those children are minimal and hold very little priority in educational programing. Although 21 States have enacted legislation to provide special programs for gifted children, the legislative actions are more expressions of intent than actual practice. Even in school districts selected as models for their provisions for children with unusual learning needs, as a group the gifted have the lowest funding priority.

The U.S. Office of Education has launched several activities as part of a 5-year plan to enhance the quality of educational resources and services available to gifted children. The major Federal objectives in this effort will be to establish a working program for gifted and talented education, to strengthen the numbers and capabilities of staff involved in such programs, to make available improved teaching methodologies and technologies, and to create high quality programs to serve a greater number of gifted and talented children. For more information concerning the programs or the establishment of the new office, write to Gifted and Talented Education Group, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

JIS Book Describes Drug Projects

The Joint Information Service of the American Psychiatric Association and the National Association for Mental Health has recently published a book entitled *The Treatment of Drug Abuse: Programs, Problems, and Prospects.* The book is the result of a JIS study of nine of the longest-established, best-known

treatment programs in the country, operating more than 40 facilities and components. According to the study, none of the present approaches to treatment of drug abuse can be expected to be very successful. The book takes a comprehensive look at programs and treatment methods (i.e., emergency detoxification, methadone maintenance, drug-free residential programs, and residential programs under religious sponsorship), and presents various details about the possible causes of drug abuse. The purpose of the study was to provide communities with an estimate of expected results from various treatment approaches. The publication is for sale for $7 each from the American Psychiatric Association Publications Service Division, 1700 18th St., N.W., Washington, D.C. 20009.

Second Annual "Marihuana and Health" Report Submitted to Congress

In February 1972, Elliot Richardson, Secretary of the Department of Health, Education, and Welfare, submitted to Congress the second in a series of annual reports on marihuana and health. The report described the present state of our knowledge on this subject and the progress that has been made in the past year.

It was reported that much additional data has been gathered with respect to the extent of American marihuana use since last year. There is every indication that use has increased and is widespread throughout all age, sex, socioeconomic, and geographical groups. While heavier marihuana use is clearly associated with the use of other drugs as well, there is no evidence that the drug itself "causes" such use. Also, marihuana use does not appear to have a causal role in the commission of crimes.

The report emphasized that what is termed marihuana varies greatly in potency from place to place and from time to time even in the same area. It was stated that a great deal of work is being done in order to develop adequate methods for measuring the amount of cannabis constituents or their metabolites in human body fluids. Animal research, however, is stated as having laid the basic groundwork for establishing the effects of cannabis in humans. Much research is being conducted on the cannabis synthetic psychoactive ingredient THC (tetrahydrocannabinol) and its transformation in the body into metabolites which are persistently present for several days.

Pertaining to the effects of marihuana in man, it was stated that recent findings confirm earlier reported observations that acute marihuana intoxication causes a deterioration in intellectual and psychomotor performance which is heavily dose-related as well as dependent on the complexity of the task. To some degree, experienced users seeem better able to compensate for part of this effect than do inexperienced users. Marihuana has also been shown to have an acute effect on short-term memory. Recent work suggests that driver performance is significantly impaired by marihuana intoxication.

In general, recent studies suggest that acute toxical physical reactions to marihuana are relatively rare. What work has been done on the influence of marihuana on genetic and birth defects has found little evidence of chromosomal abnormalities in marihuana users as compared to matching nonuser controls. Further studies are continuing on the relationship of cannabis and psychiatric illness; however, no definite conclusions have been drawn as yet.

The report stated that there has been a continued interest in marihuana's

possible therapeutic value in the treatment of depression and in the possible development of an antihypertensive agent. More recently it has been found that marihuana reduces intraocular pressure. This means that cannabis or some chemically related synthetic may prove useful in the treatment of glaucoma. Future research directions in the study of marihuana are also described in the report.

Four Foundations Establish Drug Abuse Council

Four major private foundations announced the establishment of a national Drug Abuse Council as an independent source of information, policy evaluation, and research funding in the field of drug abuse. The foundations are the Carnegie Corporation, The Commonwealth Fund, Ford Foundation, and the Henry J. Kaiser Foundation. The Council will consist of 15 leading representatives of various sectors of American life. Dr. Thomas E. Bryant, former director of the Office of Health Affairs of the U.S. Office of Economic Opportunity, has been named president of the Council. Additional information may be obtained from the Drug Abuse Council, 1828 L Street, N.W., Washington, D.C. 20036.

New Publications

Foreign Psychiatry is a new quarterly journal that contains translations of material that has appeared originally in scholarly journals and books throughout the world. The journal will emphasize clinical aspects of psychiatry—diagnosis and treatment, rehabilitation, delivery of psychiatric services, and other subjects of interest to the clinician. Annual subscription rate for institutions, is $50, and for those certifying that the subscription is for personal use, $15. *Foreign Psychiatry* is published by International Arts and Sciences Press, Inc., 901 Broadway, White Plains, N.Y. 10603.

Another new quarterly journal, the *International Journal of Mental Health,* will be available from the above publishers. Each issue will present in-depth studies on a single topic under the guidance of a special editor in that field. The first issue—Spring-Summer 1972— is on "Genetics and Mental Disorders." Annual subscription for individuals is $10; for institutions it is $20.

Selective Giving: An Account of the Ittelson Family Foundation has recently been published. The Ittelson Family Foundation supports projects in public health and social welfare with special emphasis on mental health and research in psychiatry and behavioral science. This book gives profiles of selected programs, further perspectives, and a summary of the grants and representative grantees of the Foundation. Complimentary copies are available, as long as the supply lasts, from William T. Beaty II, Secretary, Ittelson Family Foundation, 660 Madison Ave., New York, N.Y. 10021.

Drug Surveys and Reports on Student Populations is a partial bibliographic guide for researchers compiled by Samuel Pearlman, Ph.D., Brooklyn College of the City of New York, Brooklyn, N.Y. 11210. The listings are meant to give focus to the efforts of investigators and to the interests of other individuals concerned with the drug scene in the schools, colleges, and universities. A limited supply of copies are available free of charge from Dr. Pearlman at Brooklyn College.

Legislative Guide for Drafting State-Local Programs on Juvenile Delinquency is a report designed to help concerned officials draft legislation establishing State and local programs for preventing delinquency and rehabilitating delinquent youth. Topics include probation services, detention and shelter care facilities, community-based treatment centers, work-release programs, probation subsidies, runaways, and drug addiction. A copy may be obtained from the Youth Development and Delinquency Prevention Administration, Social and Rehabilitation Service, DHEW Building, Room 2030-South, Washington, D.C. 20201.

Drug Abuse Prevention: A Guide to Speakers is a listing of agencies that provide speakers on the topic of drug abuse. It gives information by State on each agency or program operating a speaker's bureau, including the name of the director, address, and telephone number. Copies are available from the National Clearinghouse for Drug Abuse Information, Department MEK, Room 8C09, 5600 Fishers Lane, Rockville, Md. 20852.

The Use of Cannabis, a report of a World Health Organization Scientific Group, describes recent advances in cannabinoid chemistry and outlines the historical trends in the use of cannabis in various parts of the world. It also discusses the manner, frequency, amount and duration of use, reasons for use, and some characteristics of cannabis users. Current knowledge of the effects of cannabis on man is reviewed at some length. The final sections contain a statement of research needs and suggestions as to how such research might be encouraged and facilitated. The 47-page report (WHO Technical Report Series, 1971, No. 478) may be obtained from the American Public Health Assocation, Inc., 1015 Eighteenth St., N.W., Washington, D.C. 20036 or from the World Health Organization, Distribution and Sales Service, 1211 Geneva 27, Switzerland. Price is $1.00 (or 30p or Sw.fr. 3.-).

Crisis in Child Mental Health: A Critical Assessment is a detailed critique of the report of the Joint Commission on Mental Health of Children, *Crisis in Child Mental Health: Challenge for the 1970's.* It charges the Commission with having made "no attempt to understand the underlying factors in our confusing attitudes toward children" and with neglecting clinical issues. The report was prepared by an ad hoc committee of the Group for the Advancement of Psychiatry and reflects the judgment of all members of GAP. It includes a series of six recommendations designed to strengthen current services for the treatment and prevention of mental illness in children. Especially emphasized is the need to study "anti-child attitudes abounding in our culture." Copies (GAP Report No. 82) may be obtained for $1.00 each from the Publications Office, Group for the Advancement of Psychiatry, 419 Park Ave. South, New York, N.Y. 10016.

CORRECTION—In the December issue of the *Digest,* in the "Drugs in Norway" article, on the top of page 2, left column, the representative sample of the adult Norwegian population should have been 2000 persons, not 200.

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recent nimh publications

Single copies of these publications may be obtained from the Office of Communications, National Institute of Mental Health (Publications Issuance Unit, Room 1B64, Parklawn Building, 5600 Fishers Lane, Rockville, Md. 20852). A complete list of all publications available from the NIMH may also be obtained from the Office of Communications. If a price is given, the publication may be ordered in quantity from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Enclose a check or money order payable to the Superintendent of Documents.

Mental Health Program Reports—5. This 388-page book is the fifth volume in the NIMH series of *Program Reports*. It reflects the broad range of the Institute's current activities in research, mental health manpower, and delivery of mental health services. A special section is devoted to biofeedback programs. DHEW Publication No. (HSM) 72–9042. $7.75

Planning for Creative Change in Mental Health Services: Information Sources and How to Use Them. This 22-page booklet is one of a series of publications on mental health services research and development. The publication lists and describes various search services, indexes to the periodical literature, and current journals, bulletins, and digests. DHEW Publication No. (HSM) 71–9058. 35¢

Alcohol and Health. This 121-page book is the first special report to the U.S. Congress on alcohol and health from the Secretary of DHEW. The report has been published under the auspices of the National Institute on Alcohol Abuse and Alcoholism. Chapters describe the substance ethanol, uses and abuses of alcohol, alcohol's physical effects, treatment, research, etc. DHEW Publication No. (HSM) 72–9099. $1.50

Residential Treatment Centers for Emotionally Disturbed Children, 1969–1970. This is No. 6 in the mental health statistical Report Series A. The report provides not only the characteristics of the treatment centers and their utilization, but also numerous detailed tables of data that were collected in the Inventory of Mental Health Facilities, a mail survey conducted in January 1970 by the Biometry Branch of NIMH with the cooperation of the State mental health authorities. DHEW Publication No. (HSM) 72–9022. 45¢.

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